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Dr. MAX WEBER
Prof. in Amsterdam, Leider der Expeditie

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THE

SCHIZOPODA OF THE SIBOGA EXPEDITION

BY

H. J. HANSEN
Copenhagen

With 16 plates and 3 text figures

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INTRODUCTORY REMARKS.

The material of Schizopoda collected by the "Siboga" Expedition is large. But when we wish to get a more special view it is necessary to consider separately the two orders still generally put together under that name, viz. the Mysidacea and the Euphausiacea.

The large majority of the Euphausiacea are true oceanic forms, living generally either in the upper layer from about 100 metres to the surface or in more considerable depths; only very few inhabit as a rule shallower water either near land or at most at a distance of some miles from the coast. The major part of the stations of the "Siboga" are situated close by or not very far from the coast of one of the innumerable islands of the Indian Archipelago, consequently the number of Euphausiacea captured is moderate, comprising 25 species, 7 (8) of which are new. That the number of new forms is even so high is due to the fact that I have been able to separate with certainty species hitherto confounded with each other or overlooked, and this was done by a more special investigation of the copulatory organs of first pair of pleopods in the male sex. These organs have been completely omitted by previous writers excepting G. O. SARS, and this eminent Zoologist produced a number of figures of these very complex organs, but in reality did not perceive their extreme importance, did not see that in most genera they present the most reliable characters for the separation of species otherwise closely allied or even scarcely distinguishable. Five of these new species are known to me from other oceans, most frequently from the Pacific; *Euphausia Sibogæ* H. J. H. has been mentioned by me from Amboina, but of *Stylocheiron affine* n. sp. and *S. insulare* n. sp. only the "Siboga" specimens have been seen.

When we turn to the Mysidacea the aspect is totally different. A minor part of the genera or species of this order are true oceanic forms living either not far from the surface (a few species of the Siriellinæ) or in deeper strata (*Gnathophausia*, *Eucopia*, etc.). The large majority of forms live more or less pelagically and frequently a little above the bottom either near the coast in shallow water or somewhat longer from land down to some hundred metres. But a large number of the "Siboga" stations are from near land to scarcely a score of miles from the coast of one of the numerous islands in the Indian Archipelago, and consequently well adapted for many types of Mysidacea. And the number of species of this order captured by the "Siboga" is 47, 44 of which are described or enumerated here, while 3 are omitted, each of these being represented by a single mutilated specimen too bad for a sufficient description. But putting aside these 3 forms, the number 44 is somewhat higher than the sum of Mysidacea hitherto known from the entire tropical belt around our globe. Among these 44 species only 10 can be referred with certainty to previously established forms, 1 species is somewhat uncertain and at least 33, probably 34 are hitherto unknown forms. It may be pointed out that in no earlier paper dealing with this order so many new species have been established. It was necessary to erect 8 new genera, but only one of these shows a feature of more general interest, viz. *Lycomysis* n. gen., in which the second joint of the mandibular palps is shaped as a strong, excellent saw, certainly in order to take an active part in the treatment of the food.

That the capture of 44 species of Mysidacea is an excellent result goes without mention. But it is easy to prove that several forms still undiscovered live in the seas and straits traversed by the "Siboga". Among the 34 (33) new species 17 are known from only a single station, and among these 8 are represented only by a single specimen. And every Zoologist experienced in questions on occurrence and distribution will admit that when three-fourths of a very considerable number of species captured within a vast area are new to science and half of these new forms have been found only at a single station, a good number of forms are still discoverable.

For various reasons I have not attempted to put together a view of the fauna of the seas south of Asia. Our knowledge before 1905 of the Schizopoda from these seas was extremely poor; in 1905 and later ILLIG published a number of forms in preliminary notes in the "Zoolog. Anzeiger". In foot-notes I add descriptions of four new species of Mysidacea from various places in the seas indicated and belonging to the Copenhagen Museum, as these species belong to genera represented in the "Siboga" collection and it is possible to render them recognisable without figures, but some other forms it was found necessary to omit. Even after the big addition given in this volume our knowledge of the Euphausiacea inhabiting the tropical seas south of Asia is somewhat imperfect, while of the Mysidacea it is probably — as far as I am able to see — still very defective.

I. The Order MYSIDACEA.

In 1883 J. E. V. Boas divided the Schizopoda into two orders, the Euphausiacea and the Mysidacea, and the latter again into two suborders, Lophogastrida and Mysida; this classification has been adopted by me in various papers and it is followed here. In his "Challenger" work (Report, Vol. XIII, 1885) G. O Sars divided the Schizopoda into four families: Lophogastridæ, Eucopiidæ, Euphausiidæ and Mysidæ, the two first-named families together answering to the suborder Lophogastrida Boas, and the last-named family identical with the suborder Mysida Boas. Sars, whose papers have furthered our knowledge of the present order more than the contributions of all other authors taken together, never attempted to divide his Mysidæ into subfamilies or groups.

In 1882 Czerniavsky (Monographia Mysidarum imprimis Imperii Rossici, 1882—87) divided the Schizopoda into six families: Nebalidæ, Euphausidæ, Lophogastridæ, Petalophthalmidæ, Mysidæ and Chalaraspidæ, in reality a most unfortunate classification, but it may be added that the Petalophthalmidæ, as to which only a poor preliminary note had been published, and the Mysidæ are accepted here. The family Mysidæ he divided into six subfamilies, of which only one, the Mysidellinæ, is accepted; the names of two other subfamilies established by him, the Siriellinæ and the Mysinæ, are adopted here, but these subfamilies are circumscribed in a very different way and consequently their contents are partly very different; his three remaining subfamilies are discarded. Furthermore he established many new genera and subgenera, a good deal of which are still-born. The author had a proportionately small material, and even sometimes he established genera or subgenera on more or less significant imperfections or errors in descriptions or figures of earlier authors, for instance *Arctomysis* Czern. as different from *Boreomysis* G. O. Sars on a small error in Kröyer's description of the number of the "tarsal" joints in *Mysis (Boreomysis) arctica* Kr. The work contains an excellent bibliography and an enumeration of all species established, but in all other respects it is somewhat poor, especially as the author ought to have used the two main papers of G. O. Sars (Monographi over de ved Norges Kyster forekommende Mysider, 1870—79, and Middelhavets Mysider, 1877) as models of his own task.

In 1892 A. M. Norman (On British Mysidæ: Ann. Mag. Nat. Hist. Ser. 6, Vol. 10) divided the members of the family named inhabiting or possibly inhabiting the British seas into seven subfamilies, viz. Siriellinæ, Gastrosaccinæ, Heteromysinæ, Leptomysinæ, Mysinæ, Stilomysinæ

and Mysidellinæ. Three of these subfamilies, viz. the two first-named and the Mysidellinæ, are accepted here, while the four others, separated by too vague or unimportant characters and scarcely maintainable, are put together constituting the subfamily Mysinæ, which again is subdivided into tribes of lower rank. In 1905 HOLT & TATTERSALL (Schizopodous Crustacea from the North-East Atlantic Slope: Fisheries, Ireland, Sci. Invest. 1902—3, IV) established the subfamilies Arachnomysinæ and Boreomysinæ, the latter of which I accept. In 1906 the same authors in a supplement to the paper named (Fisheries, Ireland, Sci. Invest. 1904, V) established the subfamily Mysidetinæ which I cannot accept, and in 1909 TATTERSALL (Mitth. Zool. Stat. Neapel, 19. B.) established the subfamily Calyptomminæ on immature specimens of a single species, wherefore a final judgment on this group cannot be given.

Having examined representatives of the majority of the numerous genera of the family Mysidæ hitherto known I think it useful to attempt to arrange them as naturally as possible. It may be convenient to begin with a brief examination of all parts of the skeleton in order to be able to estimate the systematic value of the differences. Then it will be more easy to point out some main lines for the classification as the base for the establishment of subfamilies and the subdivision of one of these into tribes. It is, I think, generally admitted, that the suborder Lophogastrida is lower than the suborder Mysida; the latter is very naturally divided into the two families: Petalophthalmidæ and Mysidæ, and the former family is lower than the latter, showing some characters rarely or not at all met with in the Mysidæ but found in the Lophogastrida, as the number of marsupial lamellæ, the undivided state of sixth joint of the thoracic legs, no otocysts, etc. Therefore the Lophogastrida and the Petalophthalmidæ are of importance to the correct estimate of several structural features in the Mysidæ.

The Cephalothorax is essentially uniform in most genera of the family. In *Arachnomysis* Chun the first thoracic segment is extremely elongated, with the result that there is a very long distance between the maxillipeds and the gnathopods. In *Longithorax* Illig and especially in *Gymnerythrops* n. gen. the last segment is extremely elongated. But an investigation of the structure of these genera shows that the cephalothoracic characters are only secondary modifications.

The Carapace shows considerable variation. In some forms (*Anchialina* Norm.) it covers the posterior cephalothoracic segments, but in most species it is considerably emarginate behind, leaving uncovered the major dorsal part of the last segment and frequently besides of the penultimate segment. Anteriorly it is most frequently produced into a projecting, less or more rounded or acuminated, triangular plate which in *Siriella frontalis* M. Edw. and *S. armata* M. Edw. is somewhat long, but sometimes the front margin is only a little convex or feebly angular; in *Arachnomysis* Chun it is anteriorly shorter than in the other genera, with the front margin transverve and armed with spiniform processes. In most species of *Boreomysis* G. O. S. the lateral part of the front margin is produced below into a conspicuous lateral plate. In *Arachnomysis* Chun, *Chunomysis* Holt. & Tatt. and especially in *Cæsaromysis* Ortm. the carapace has a number of spiniform processes. The particulars mentioned are frequently valuable as generic or specific characters, but scarcely any one among them may be considered of higher rank.

The Eyes with their Stalks present many differences, but all at most only of

generic value. The eyes themselves are frequently nearly semiglobular, in *Erythrops* G. O. S. depressed; in the two blind species of *Boreomysis* G. O. S. (*B. scyphops* G. O. S. and *B. distinguenda* H. J. H.) and in the genera *Pseudomysis* G. O. S., *Pseudomma* G. O. S., *Calyptomma* Tatt., *Amblyops* G. O. S., *Bathymysis* Tatt., and *Paramblyops* Holt & Tatt. the retina has disappeared, and in the latter types the entire appendages have been strongly altered, plate-shaped, in *Pseudomma* and *Calyptomma* even coalesced with each other. The eye-stalks are long in some, very short in other genera. In several forms a triangular or nearly cylindrical process is seen on the inner or upper side near the margin of the retina, and in *Mastigophthalmus* Illig this process is extremely long. In some genera (*Euchætomera* G. O. S., *Mastigophthalmus* Illig) each eye has its retina divided into two eyes, sometimes considerably removed from each other and always showing internal differences; in *Arachnomysis* Chun the eyes differ in aspect from those in all other forms, according to CHUN answering only to the upper section of the eyes (the upper eyes) in his *Brutomysis* (= *Euchætomera* G. O. S.).

Antennulæ. — The peduncle is sometimes about equally thick in both sexes, but most frequently it is conspicuously, sometimes even very much, thicker in the male than in the female. But other sexual characters are of more importance. In the subfamilies Boreomysinæ, Rhopalophthalminæ, Gastrosaccinæ, Mysidellinæ and the tribe Heteromysinæ the male lobe bearing the sensory setæ on the lower side of third joint is very short and knot-shaped or rudimentary, while in the Siriellinæ and the Mysinæ excepting *Heteromysis* Smith it is of considerable size, thick and protruding in front, frequently even a long process. In some forms, as *Boreomysis* G. O. S., *Rhopalophthalmus* Illig, *Gastrosaccus* Norm. and *Anchialina* Norm., the basal part of the outer flagellum in the male is expanded on the inner side. Other differences observed are of small importance.

Antennæ. — The squama is wanting in *Arachnomysis* Chun, *Gymnerythrops* n. gen. and *Chunomysis* Holt & Tatt., very reduced in *Cæsaromysis* Ortm., well developed in all other genera of the family. In *Siriella anomala* n. sp. it shows a strong sexual difference (see below). Its distal suture is observed in the large majority of forms, but it is easily and frequently overlooked, and it is certainly of slight systematic value. On the extreme variability of the shape of the squama it is not necessary to speak; frequently its size and general shape afford useful generic characters, and sometimes the same features may be used as additional characters for some small subfamilies, but the large specific differences in shape and furniture with setæ or spines sometimes met with in forms belonging to the same genus (for instance between *Amblyops Crozetii* Will.-Suhm and *A. australis* G. O. S., or between *Erythrops erythrophthalma* Goës and *E. serrata* G. O. S.) show that even such strong differences not unfrequently tell little or nothing on the affinity among genera.

Labrum. — In Mysidellinæ this organ is very aberrant, being produced posteriorly into a thin lamella divided by a deep angular incision into two considerably unequal lobes. In the majority of the other genera it is a little broader than long, with the front margin very convex or angular and the angle itself rounded, but in the Siriellinæ, the Gastrosaccinæ and the genus *Lycomysis* n. gen. it is very much longer than broad, being anteriorly produced into a long, pointed process. The shape of the labrum thus seems to be a character of importance,

yet in *Mysis (Neomysis) vulgaris* Thomps. its very convex front margin has a moderately short, conical process, thus being to some extent an exception from that in the other Mysinæ.

Mandibles. — In the Mysidellinæ these appendages are quite anomalous (comp. G. O. Sars, Norges Mysider). In several genera the cutting edge, the movable lacinia, the setæ and the molar process are well developed, but frequently one or two of these elements are less or more reduced or sometimes quite lost; the characters shown by the numerous differences in these parts seem, however, as a rule to be only of generic value. The joints of the palps present minor differences of generic value; in a single genus, *Lycomysis* n. gen., the inner part of the second joint is expanded, firmly chitinised, with a row of sharp saw-teeth, certainly constituting an auxiliary instrument for dealing with the food.

Maxillulæ. — In the Mysidellinæ (the genus *Mysidella* G. O. S.) they are aberrant (comp. G. O. Sars), otherwise they are somewhat uniform, presenting sometimes smaller differences of generic value.

Maxillæ. — They are somewhat uniform in the whole family; the lobe from second joint, the size of the exopod, the size and shape of the last joint of the palp show characters of generic, but not of higher, value.

Maxillipeds. — In *Arachnomysis* Chun these appendages have no epipod, in *Arachnomysis* Chun and in *Cæsaromysis* Ortm. the exopod is wanting; in all other genera both the epipod and the exopod are well developed. The endopod (the two proximal joints included) shows numerous differences in the size and direction of the second joint, in breadth and furniture with setæ or spines of the following joints, in the number of lobes and in the development or existence of the claw. In some genera the second joint has no lobe; in the majority this joint has a free lobe varying much in size; in some genera the third joint is also provided with a lobe, and in some forms (f. inst. in *Mysis oculata* O. Fabr.) the second joint has a large lobe, third and fourth joints each a lobe of considerable size. In *Mysidopsis* G. O. S. second and third joints are coalesced (according to G. O. Sars), and in *Mysidella* G. O. S. the distal joints, especially sixth joint, are aberrant (see below). The characters derived from the more essential differences are always of generic and sometimes of somewhat higher value; thus it may be pointed out that a lobe from the third joint is wanting or small, a lobe on fourth joint always wanting in the genera which in more important characters are related to the lower families of the order.

Gnathopods. — For practical reasons I apply this name, because these appendages, in reality the first pair of thoracic legs, being as a rule intermediate in structure between the maxillipeds and the following legs, are to be mentioned separately many times in the following descriptions. The gnathopods show differences essentially of the same nature as those found in the maxillipeds, with the exception that lobes are never so highly developed as on the latter appendages in many forms: the lobe from second joint, if present, is generally broad and somewhat short, a lobe from third joint is never found, and only in *Mysideis* G. O. S. a kind of short lobe is developed on fourth joint. In *Arachnomysis* Chun the gnathopods are elongated, exceedingly strong, and seventh joint with the claw can be bent against the terminal part of the sixth joint; in *Euchætomera* G. O. S. the last-named peculiarity begins to develop; in

Anchialina Norm. some of the distal joints are peculiarly developed in the male, normal in the female.

Six Pairs of thoracic Legs. — In the suborder Lophogastrida and in the family Petalophthalmidæ the sixth joint is always undivided; in the Mysidæ it is generally divided into subjoints, but their number is very different. In the Siriellinæ this joint has only a single articulation, which is transverse or oblique, at most allowing a slight lateral flexion; in some few species I have been unable to find this articulation which seems to have disappeared. In all other Mysidæ the sixth joint of the thoracic legs has at least a transverse more movable articulation beyond the middle (the very thick first pair in *Heteromysis* Smith has the joint undivided); in a good number of genera (f. inst. *Erythrops* G. O. S., *Parerythrops* G. O. S., *Pseudomma* G. O. S., *Amblyops* G. O. S., *Holmesiella* Ortm., that is to say in the genera constituting the rich tribe Erythropini mihi) it has one distal vertical and generally a somewhat more proximal oblique articulation; in *Boreomysis* G. O. S. it has at least one, generally two vertical articulations, in *Mysidella* G. O. S. it has — according to Sars — one vertical articulation on the first pair and two on the following pairs, in *Mysidopsis* G. O. S., *Mysideis* G. O. S., *Mysidetes* Holt. & Tatt. and *Leptomysis* it has two vertical articulations, in *Hemimysis abyssicola* G. O. S. it has — according to Sars — three articulations on the five anterior pairs and four on the last pair; in some species of the subfamily Gastrosaccinæ and of the genus *Mysis* sens. Sars 1879 the number of articulations is still higher. In genera consisting of very small species of the Gastrosaccinæ and the tribe Mysini the number of these secondary articulations is lower than in genera consisting of larger or large species. But on the whole the number and direction of these articulations is of interest, because they are to be considered as secondary divisions of a joint undivided in the lower families of the order.

In the subfamily Siriellinæ the seventh joint and the claw are very strong except on first pair in *Hemisiriella* n. gen., in many other genera the same elements are less strong but yet well developed, while in some genera (*Rhopalophthalmus* Illig, *Anchialina* Norm.) both are either rudimentary or even impossible to point out. In the Siriellinæ the end of sixth joint is furnished with a brush of strong setæ serrated in a most peculiar way (to be described in the definition of the subfamily); in *Hemisiriella* n. gen. the first pair of legs are extremely elongated in both sexes; in *Heteromysis* Smith the legs of first pair are strong, prehensile organs; in the male of some species of *Anchialina* Norm. the first pair are distally developed in an aberrant way showing characters of specific value.

Marsupium. — In the Lophogastrida and Petalophthalmidæ it consists of seven pairs of lamellæ. Among the Mysidæ this number has been preserved in *Boreomysis* G. O. S., which also in a few other features shows kinship to the lower Mysidacea. In all other Mysidæ only three or two pairs (? one pair) of marsupial plates are found.

Abdominal Segments. — In nearly all — perhaps in all — Gastrosaccinæ the first segment has a pair of lateral lamellæ, sometimes quite small (*Anchialina typica* Kr.), in other forms (*Gastrosaccus* Norm.) very large, as a kind of partial covering or support of the marpusium. There is no trace of these lamellæ in any other subfamily.

Pleopods. — A. Female. In the Lophogastrida all pleopods are well developed,

with both rami multiarticulate. In the Petalophthalmidæ all pleopods are unbranched (according to FAXON the left pleopod of fifth pair in his adult female specimen of *Ceratomysis spinosa* Fax. "bears a slender lateral branch"), but they increase frequently greatly in length from before backwards, so that the fifth pair are even longer than the sixth abdominal segment. In the Mysidæ all pleopods are always reduced but in very different degree. In *Archæomysis* Czern. and *Callomysis* Holmes (these two genera are perhaps identical) all pleopods consist of a peduncle with two one-jointed rami marked off by articulations; in *Gastrosaccus* Norm. the first pair are built as in *Archæomysis*, while the other pairs consist of a single joint. In all other Mysidæ the pleopods are one-jointed, generally small or very small, oblong or quite styliform, but in rare cases, especially in *Pseudomma parvum* Vanh., they increase much in length backwards, so that the fifth pair are even slightly longer than the long sixth abdominal segment. In *Paranchialina* n. gen. (type: *Anchialus angustus* G. O. S.) the three anterior pairs and in *Anchialina* the first pair are normal, nearly styliform, while the remaining pairs are transverse plates broader than long.

B. Male. In Lophogastrida all pleopods are well developed, subsimilar, with both rami multiarticulate; neither any exopod nor any endopod shows any secondary modification as to length or peculiar equipment with spines or hairs. In the Petalophthalmidæ and in many genera of the Mysidæ all five pairs are well developed, but the endopod of first pair is always without articulations, at most somewhat more than one-third as long as the exopod (*Boreomysis arctica* Kr.) and generally much shorter. In forms with both rami multiarticulate in the four posterior pairs the endopod of these pairs and frequently also the endopod of first pair has near or at the base a mostly oblong, flattened protuberance projecting less or more outwards; in *Anchialina* Norm. and *Rhopalophthalmus* Illig the protuberance is a thin and sometimes large plate varying much in shape. In the Siriellinæ this protuberance consists in all five pairs of a short stalk with two sausage-shaped branches which are either simple or spirally twisted, the latter being the case in second to fourth pairs of pleopods in the majority of species; these transformed appendices are named pseudobranchiæ.

It is a well-known fact that in numerous other genera of the Mysidæ one pair of the pleopods have one of the rami and generally the exopod less or more elongated and often besides much altered as to shape and furniture with hairs, while the other ramus, generally the endopod, and the other pleopods frequently, but not always, are somewhat or very much reduced. In the genus *Mysidetes* Holt. & Tatt. and in two more aberrant types, *Heteromysis* Smith and *Mysidella* G. O. S., all pleopods are rudimentary as in the females, consisting of a single joint. Though all these differences in the male pleopods are well known and have been much used by authors especially as generic characters, I think it may be possible to point out some hitherto scarcely recognised main lines of higher systematic importance.

In the majority of the Siriellinæ, viz. in *Hemisiriella* n. gen. and in many species of *Siriella* Dana, the exopod of first pair and both rami of the four other pairs are subsimilar in length and other respects, none of the joints or setæ being elongated or showing any special equipment. But in the Asiatic forms of *Siriella* with the armature along the distal third of the telson very irregular — small spines being intermingled between larger or much larger spines —

the fourth, and in *S. anomala* n. sp. besides the third, pair of pleopods differ from the other pairs. In some species, as *S. conformalis* n. sp., *S. distinguenda* n. sp. and *S. æquiremis* n. sp., the endopod is distinctly longer than the exopod with its four or three most distal setæ naked and at least the two terminal setæ stronger than the plumose more proximal setæ. In *S. media* n. sp., *S. inornata* n. sp., *S. plumicauda* n. sp. and *S. serrata* n. sp. both rami of fourth pair are equal in length, but both have the distal or only the terminal setæ peculiarly developed, at least two among them being very strong and partly or quite naked. In *S. anomala* n. sp. fourth pair of pleopods show nearly the same structure as in *S. æquiremis* n. sp., but besides the third pair have the endopod somewhat longer than the exopod, with the penultimate joint very elongated and the terminal setæ of the last joint very broad, peculiarly shaped, oblique. Thus the eight species enumerated differ sharply from *S. Thompsonii* H. M.-Edw., *S. gracilis* Dana, *S. quadrispinosa* n. sp., *S. nodosa* n. sp., *S. vulgaris* n. sp. and *S. affinis* n. sp. in the structure of the pleopods named, and besides it is astonishing to find such sexual differences between the males of otherwise closely allied species, in a couple of cases even so nearly related that I have been unable to find trustworthy differences between their females. In the European species *S. norvegica* G. O. S., *S. Clausii* G. O. S. and *S. jaltensis* Czern., which are rather similar to *S. æquiremis* n. sp. in the spinulation of the distal part of the telson, the pleopods of fourth or third pair have both rami equal in length and none of their setæ peculiarly developed.

In the interesting genus *Rhopalophthalmus* Illig, which I take as the type of a new subfamily, all pleopods are well developed but the exopod of second pair is exceedingly elongated. In the Boreomysinæ the pleopods are well developed, but the exopods of second and thirds pairs are somewhat or considerably elongated (sometimes the second more so than the third, sometimes vice versa) and the setæ on the distal joints of third exopod or of both second and third exopods are reduced in length.

In the subfamily Gastrosaccinæ, comprising *Anchialina* Norm. (= *Anchialus* Kr.), *Paranchialina* n. gen. (type: *Anchialus angustus* G. O. S.), *Archæomysis* Czern., *Callomysis* Holmes, *Gastrosaccus* Norm. (*Chlamydopleon* Ortm., *Haplostylis* Kossm.), and *Pseudanchialina* n. gen. (type: *Anchialus pusillus* G. O. S.), the exopod of third pair is always conspicuously or even extremely elongated, and the pleopods show several interesting peculiarities as to the degree of their development. In *Anchialina* and *Paranchialina* the exopod of third pair is less or more elongated and frequently with the distal part very peculiarly developed, though very different in various species (comp. this exopod in *A. typica* Kr., Pl. VII, fig. 2*i*, with that in *A. grossa* n. sp., Pl. VIII, fig. 1*b*); the endopod and the other pleopods are well developed, normal. Of *Gastrosaccus* Norm. (including *Haplostylis* Kossm.) I have examined eight species, all similar in aspect and allied to each other in most particulars excepting the degree of development of the pleopods: the exopod of third pair is always very, sometimes exceedingly, elongated, but the endopod is sometimes normally developed, sometimes rudimentary or scarcely discernible or perhaps wanting; the rami of second pair are either normal or the endopod is much reduced; fourth and fifth pairs are always reduced in size, but sometimes the exopod is normal in shape, the endopod unjointed (*G. sanctus* v. Ben.), sometimes both rami are unjointed (*G. indicus* n. sp., Pl. VIII, figs. 2*m*—2*n*), sometimes the exopod is quite rudimentary while the endopod is a simple

styliform joint (*G. parvus* n. sp., Pl. VIII, figs. 3*k*—3*m*); taking the close relationship between the species into consideration the features pointed out show that sometimes the degree of the ot reduction of the pleopods, excepting the characteristic ramus, is of slight importance and ought not to be used as the sole character for new genera. — In *Pseudanchialina* n. gen. we proceed a step further: third pair of pleopods are developed essentially as in *Gastrosaccus bengalensis* n. gen., while not only fourth and fifth pairs but even first pair consist of a single joint and the second pair are still more reduced than in any species of *Gastrosaccus*.

In the large subfamily Mysinæ the pleopods show most different degree of development, but in the great majority of genera one of the rami of fourth pair and most frequently the exopod is especially developed, slightly to very much elongated or adorned with peculiar setæ, while the rami of third and second pairs are either well developed and normal or less or more reduced. — In the tribe Erythropini the four posterior pairs are well developed; in *Erythrops* G. O. S. and *Pseudomma* G. O. S. the fourth pair have — according to SARS — the endopod slightly longer than the exopod, with some of its most distal setæ considerably stronger than usual; in *Amblyops abbreviata* G. O. S. it is the exopod which shows a similar development. In the majority of the other genera belonging to this tribe the pleopods have not been specially examined as to such minute details. In *Holmesiella* Ortm., which according to the shape of the antennal squama and the very oblique articulation on sixth joint of the thoracic legs ought to be removed from the *Leptomysis*-group (where it was placed by ORTMANN) to the Erythropini, the endopod of fourth pair is very elongated, about twice as long as the normal exopod. It may be added that a special development of the endopod of fourth pair is only found in the Erythropini, not in any genus of the other tribes of the subfamily Mysinæ, but, as already stated, at least in one case the exopod instead of the endopod is a little more developed, and sometimes both rami are quite normal.

In the tribe Leptomysini the exopod of first pair and both rami of the other pairs are well developed in all genera (viz. *Mysidopsis* G. O. S., *Mysideis* G. O. S., *Leptomysis* G. O. S., *Pseudomysis* G. O. S., *Bathymysis* Tatt., *Uromysis* n. gen.) excepting *Mysidetes* Holt & Tatt. [1]), but the exopod of fourth pair is either slightly or considerably longer than the endopod, as a rule with its most distal setæ peculiarly developed. In *Mysidetes* all pleopoda are rudimentary.

In the tribe Mysinæ (*Stilomysis* Norm. included) the fourth pair have the endopod reduced and the exopod very or extremely elongated, while first and second pairs always, fifth pair frequently and in one genus (*Anisomysis* n. gen.) even third pair are so reduced that they may be considered rudimentary. A single exception from the rule as to the development of fourth pair is the genus *Heteromysis* Smith, in which all pairs are rudimentary as in the female.

Uropods. — In the Petalophthalmidæ the distal part of the exopod is marked off by an articulation, and the same feature is found in the majority of the Lophogastrida. In *Rhopalophthalmus* Illig both rami (Pl. VII, fig. 1*c*) are divided by a very conspicuous articulation beyond the middle. In the Siriellinæ the exopod shows a feebly developed distal articulation, and at least the most distal part of the outer margin of the proximal joint is provided with spines;

1) The male is unknown in the genus *Metamysidella* Illig, which probably belongs to this tribe.

the last-named feature is also seen in the Petalophthalmidæ and in some of the Lophogastrida. In the Boreomysinæ the major distal part of the outer margin of the exopod is furnished with setæ as on the distal joint of the Siriellinæ and the Petalophthalmidæ, while the proximal part is naked with a couple of spines at its distal end, and at these spines a feeble vestige of the transverse articulation is observed; in *Boreomysis inermis* n. sp. the naked part is extremely short and the spines seem to be wanting (Pl. II, fig. 4*b*). In the Gastrosaccinæ the exopod has no vestige of an articulation but its outer margin is furnished either with a number of spines (*Anchialina*, *Gastrosaccus*) or with a couple of spines beyond the middle (*Paranchialina*) or with a single spine near its end (*Pseudanchialiua*), and setæ between the spine or spines and its base are always wanting. In the Mysinæ and the Mysidellinæ the exopod has no vestige of an articulation and no spines but common setæ along its outer margin.

An otocyst is always wanting in the endopod of the uropods in the Lophogastridæ and Petalophthalmidæ, but probably always present, though sometimes rudimentary, in the Mysidæ.

Telson. — It presents infinite variation as to shape and armature and is consequently of high value for separation of genera and species, but shows scarcely any feature of higher systematic importance, though its shape can be used in the description of the small subfamilies.

It may be seen from this detailed account that among the structural differences mentioned some of those derived from the number of the marsupial plates, the exopod of the uropods, the pleopods in the male, the thoracic legs and the labrum are of higher value for dividing the family into natural subfamilies and tribes, while the differences found in scutum, eyes, antennulæ, antennæ, mouth-appendages and telson as a rule cannot be used for finding out relationship or defining such groups of higher order. It is attempted here to give a synopsis of the subfamilies and tribes.

A. Seven pairs of marsupial plates in the female.

Labrum broader than long, without front process. Thoracic legs with sixth joint divided by one or two vertical articulations. Pleopods well developed; exopod of second and third pairs elongated. Exopod of uropods with the proximal part of the outer margin naked and generally with a couple of spines and a transverse rudimentary articulation at the end of the naked part. (Telson distally cleft). . . . . Subfamily I. Boreomysinæ.

B. Three or two pairs of marsupial plates in the female.

a. Exopod of uropods with a feeble or sharp articulation beyond the middle.

α. Labrum much longer than broad, with a very long front process. Thoracic legs with sixth joint undivided or, generally, divided by a single articulation and terminating in a brush of stiff, peculiarly serrated setæ surrounding the "claw" as usually consisting of seventh joint and the real claw and very strong (except in first pair of *Hemisiriella*). Pleopods well developed, with biramous pseudobranchiæ and their rami sausage-shaped; the four posterior pairs either similar or the endopod or both rami of fourth pair or the endopods of

third and fourth pairs a little elongated with the distal setæ peculiarly developed. Exopod of uropods divided by a feeble articulation, its proximal joint with several or at least a few spines but without setæ on the outer margin. (Telson entire). . . . Subfamily II. Siriellinæ.

β. Labrum broader than long, without front process. Thoracic legs with sixth joint divided by several vertical articulations and without terminal brush; "claw" not developed. Pleopods well developed; four posterior pairs with lamellar pseudobranchiæ; exopod of second pair very elongated, while both rami are similar in the following pairs. Both rami of the uropods divided beyond the middle by a sharp articulation; outer margin of the proximal joint of the exopod without spines, setose. (Telson entire) . . . Subfamily III. Rhopalophthalminæ.

b. Exopod of uropods undivided.

α. Outer margin of the exopod of the uropods with a single spine or with two or several spines but without setæ between the spines and the base. Labrum much longer than broad, with a very long front process. Third pair of pleopods with the exopod elongated, its endopod and the other pairs either well developed or reduced in very varying degree. First abdominal segment in the female always (?) with a pair of lateral lamellæ. Endopod of the uropods either overreaching the exopod or reaching its end. (Telson long as compared with the exopod, distally cleft) . . . Subfamily IV. Gastrosaccinæ.

β. Outer margin of the exopod of the uropods without spines, but with normal setæ from the end to near the base. Labrum generally broader than long, without front process, rarely either a little longer than broad with a short process or quite anomalous. Fourth pair of pleopods with the rami either similar and well developed or, generally, with one of the rami — and most frequently the exopod — less or more elongated, while the other ramus and both rami of second and third pair are either well developed, normal, or less or more reduced; in a few genera all pleopods are rudimentary. First abdominal segment in the female without lateral lamellæ. Endopod of the uropods rarely reaching the end of the exopod, generally conspicuously or much shorter.

†. Labrum of normal shape, rounded behind. Mandibles with the cutting lobe not expanded and its edge dentate; maxillulæ of the usual shape with oblique laciniæ; maxillipeds with their sixth joint normal, consequently without any free and aculeate terminal margin. . . . . Subfamily V. Mysinæ.

§. Sixth joint of thoracic legs generally with two articulations, the proximal oblique, very rarely vertical (*Arachnomysis* Chun);

in a few genera only the distal articulation preserved. Four posterior pairs of male pleopods well developed; exopod of fourth pair rarely and at most slightly elongated, endopod of the same pair sometimes elongated, and in several genera one of these rami with peculiar setæ. Antennal squama nearly always with a pronounced external tooth, and even if this is wanting at most the distal half of the outer margin adorned with some few setæ; in a few genera the squama is styliform or wanting . . . . . Tribe 1. *Erythropini*[1]).

§§. Sixth joint of thoracic legs with two, rarely three, vertical articulations and no oblique articulation. Four posterior pairs of male pleopods either rudimentary (*Mysidetes* Holt & Tatt.) or, generally, well developed; exopod of fourth pair either elongated or terminating in a thick spine while the endopod is always normal. Antennal squama lanceolate, frequently much produced, with the outer margin setiferous to its base. Tribe 2. *Leptomysini.*

§§§. Sixth joint of thoracic legs without any oblique articulation, generally with two or three or more vertical articulations. At least second male pleopods rudimentary and the exopod of fourth pair always very elongated. Antennal squama extremely varying. . . . . Tribe 3. *Mysini.*

§§§§. First pair of thoracic legs strongly thickened, with the sixth joint undivided, very thick, spiniferous; sixth joint of the following pairs with several vertical articulations. All pleopods in the male rudimentary. Antennal squama oblong-oval. Tribe 4. *Heteromysini.*

††. Labrum posteriorly produced into a large plate divided by a deep incision into two lobes unequal in size. Mandibles with the cutting lobe very expanded and its edge straight, without teeth; maxillulæ with the laciniæ bent strongly inwards; maxillipeds with their sixth joint expanded and possessing a free distal margin with some spines. (Sixth joint of first pair of thoracic legs with one, of the following pairs with two vertical articulations. Male pleopods rudimentary) . . . . . Subfamily VI. Mysidellinæ.

The genus *Lycomysis* n. gen., established in this paper on immature male specimens, agrees with two of the subfamilies in possessing a long front process on the labrum, but differs from all other genera hitherto known in having the second joint of the mandibular palps shaped as a saw, in the armature of the telson which has not only a lateral but besides an upper row of spines, and — as far as may be judged from immature specimens — in having the endopod

1) The genus *Arachnomysis* Chun is referred to this tribe. The genus *Calyptomma* Tatt. is omitted, because only immature specimens are known and a judgment on its position is to postporied.

of the posterior pairs of pleopods longer than the exopod and the endopod of the fifth pair longer than that of the fourth. But as our knowledge of this interesting type is still imperfect as to some points of importance (the pleopods in adult males and females, the number of marsupial lamellæ), I did not find it advisable to take it into account in the synopsis.

A. Suborder LOPHOGASTRIDA.

This suborder comprises two families; both are represented in the collection.

I. Family Lophogastridæ G. O. Sars.

In his "Challenger" work G. O. Sars described four genera: *Lophogaster* M. Sars, *Ceratolepis* G. O. S., *Gnathophausia* Will.-Suhm, and *Chalaraspis* Will.-Suhm; since that time no new genus has been added. The "Siboga" collection contains representatives of three genera, viz. *Lophogaster*, *Gnathophausia*, and a new type, *Paralophogaster*, to be described in the sequel.

Lophogaster M. Sars.

Three species are known, viz. *L. typicus* M. Sars (1856), *L. longirostris* Faxon (1896), and *L. spinosus* Ortm. (1906). The "Siboga" captured several species of a new form.

1. *Lophogaster intermedius* n. sp. Pl. I, figs. 1*a*—1*e*.

Stat. 153. August 14. Lat. 0° 3′.8 N., long. 130° 24′.3 E. 141 m. Bottom fine and coarse sand with dead shells. Dredge. 1 specimen (♂).
Stat. 166. August 22. Lat. 2° 28′.5 S., long. 131° 3′.3 E. 118 m. Bottom hard, coarse sand. Trawl. 10 specimens (1 ♂, 9 ♀ with marsupium).
Stat. 204. Sept. 20. Lat. 4° 20′ S., long. 122° 58′ E. Between islands of Wowoni and Buton; Northern entrance of Buton-strait. From 75 to 94 m. Bottom sand with dead shells. Dredge and townet. 2 specimens (♀ with marsupium).

Description. — About the middle half of the dorsal surface of the carapace very finely granulated. The rostral process (fig. 1*a*) projects somewhat beyond the front end of the antennular peduncles and is about as long as the breadth of the frontal plate just behind the origin of the antero-lateral processes. The antennal squama (fig. 1*b*) is between two and a half times and two times as long as broad, with 4 to 6 teeth along its outer margin. Telson (fig. 1*c*) has only a single pair of lateral spines (in a single case 2 spines on one and 1 spine on the other side) in addition to the usual two pairs around the tip; the terminal pair of the last-named spines are from nearly two and a half times (fig. 1*d*) to three times (fig. 1*e*) as long as the other pair.

Length of a male 21.3 mm., of females with marsupium 18—20.5 mm.

Remarks. — This new species is on the whole closely allied to *L. typicus*, but differs in a number of minor characters. The granules on the dorsal side of the carapace are much

smaller and more numerous than in *L. typicus*; the rostral process is much longer than in *L. typicus*, much shorter than in *L. spinosus*; the postero-lateral process of the carapace is about half as long as the rostral process, thus distinctly longer than in *L. typicus* and several times shorter than in *L. spinosus*. The antennal squama is considerably longer in proportion to its breadth than in *L. typicus*, much shorter than in *L. spinosus*; the terminal spiniform process is from about one-third to a little more than half as long as the breadth of the squama. The number of small, spiniform teeth on the end of telson between the two large spines shows variation: in a female I found 7 teeth (fig. 1*e*), in another female and in a male only 4 teeth (fig. 1*d*). The presence of only a single pair of lateral spines (excluding the two pairs around the tip) on the telson distinguishes *L. intermedius* both from *L. typicus* and *L. spinosus*. According to the figures given by FAXON of his *L. longirostris* this species must be allied to *L. intermedius*, but differs sharply in having six pairs of lateral spines on the telson besides the two pairs around its tip.

In the male each of the six anterior thoracic segments has a very long, a little curved spiniform process in the middle line of the sternite, second to sixth segment besides a much shorter median process a little in front of the long; on seventh sternite both processes are nearly rudimentary.

A feature of morphological interest may be mentioned here. In the genus *Lophogaster* — at least in *L. typicus* M. Sars and *L. intermedius* H. J. H. — a triangular, acute tooth is found at the middle of the lower lateral margin of sixth abdominal segment, and from the posterior edge of this tooth an impressed line projects obliquely upwards and forwards on the side of the segment and nearly meets the corresponding line from the other half on the upper side; in this way the sixth segment is divided into an anterior smaller and a posterior larger portion. In the genus *Gnathophausia* Will.-Suhm a somewhat similar structure is still more pronounced (it is seen on many figures in SARS' "Challenger" work), and CALMAN has pointed out that it shows that the sixth segment in reality is formed by the fusion of the two segments well separated in the Leptostraca. I adopt this interpretation which, I think, is quite correct.

Paralophogaster n. gen.

Description. — Carapace with the frontal plate short (Pl. I, fig. 2*a*), not covering the eye-stalks, its rostral process rudimentary or wanting; posteriorly the carapace does not cover the dorsal part of the last thoracic segment, and its postero-lateral wings are rounded. Eyes well developed. The antennulæ (fig. 2*a*) have the peduncle proportionately long; first joint is somewhat longer than broad, a little longer and broader than the third, while the second is very short; inner flagellum somewhat longer than the peduncle. The antennal squama (fig. 2*a*) shaped nearly as in many Mysidæ (*Pseudomma* G. O. S., *Siriella* Dana), elongated, with the margins almost parallel; a marginal rim is not developed, and the terminal lobe, which is marked off by an articulation, projects beyond the short marginal tooth. The maxillulæ (fig. 2*f*) without palp. The maxillæ (fig. 2*g*) have the lobe from third joint deeply bifid, and the third joint itself has on the outer side a large expansion bearing the proportionately small exopod.

The maxillipeds (figs. 2*h*—2*i*) have a large exopod; their endopod is distally somewhat broader than in *Lophogaster*. The thoracic legs are essentially as in *Lophogaster*, but more slender; last pair in the female with exopod. Sixth abdominal segment (fig. 2*k*) is strongly compressed and without any dividing line on the side or any tooth on the lower margin. The uropods (fig. 2*k*) have the exopod considerably longer than the endopod and divided into two joints. The telson does not reach the end of the endopod; it is constricted a little before the end (fig. 2*l*), terminating in a small plate deeply serrated along the posterior margin (fig. 2*m*).

Remarks. — This genus seems to be more allied to *Chalaraspis* Will.-Suhm than to any other genus of the family, but it must be added that *Chalaraspis* is still very poorly known. From the three other genera it differs especially in the following characters: the frontal plate is small with the process rudimentary or wanting, the squama is shaped as in many common Mysidæ, and the telson is shorter than the uropods. It agrees with *Lophogaster* and *Ceratolepis* in having no palp on the maxillulæ, but it differs from both these genera in two other features: the lobe from the third joint of the maxillæ is bifid, and the exopod of the uropods is divided into two well separated joints. Finally it differs from *Lophogaster* but agrees with *Ceratolepis* in having the sixth abdominal segment completely undivided.

2. *Paralophogaster glaber* n. sp. Pl. I, figs. 2*a*—2*n*.

Stat. 166. August 22. Lat. 2° 28′.5 S., long. 131° 3′.3 E. 118 m. Bottom hard, coarse sand. Trawl. 1 specimen (half-grown).
Stat. 253. December 10. Lat. 5° 48′.2 S., long. 132° 13′ E. 304 m. Bottom grey clay, hard and crumbly. Trawl. 1 specimen (adult ♀).
Stat. 254. December 10. Lat. 5° 40′ S., long. 132° 26′ E. 310 m. Bottom fine, grey mud. Trawl. 1 specimen (♀ with eggs).

Description. — The frontal plate (fig. 2*a*) is small, its anterior margin nearly semicircular with a very small triangular rostrum; from the base of the plate a supra-ocular tooth projects at each side. (In a half-grown specimen the plate (fig. 2*c*) is transverse, with the short oblique lateral margins terminating in the supra-ocular teeth, while the front margin is feebly convex without rostral process). The carapace sends a lateral wing forwards along the outer side of the antennal peduncle (fig. 2*b*), where it terminates in a moderately large, spiniform process outside the base of the terminal joint of the antennal peduncle; the infra-lateral corner is angular, and somewhat above this angle the front margin terminates laterally in a protruding, acute tooth (figs. 2*a* and 2*b*). The surface of the carapace is glabrous. The eyes (fig. 2*a*) are large, reniform, oblique, dark brown. The antennal squama (fig. 2*a*) is four times as long as broad, almost equally broad from near the base to the tooth of the outer margin; the terminal joint is about as long as broad; the outer margin from the base to the distal tooth is quite glabrous, while the inner margin and the entire margin of the terminal joint are closely set with setæ. The abdomen is glabrous, at the base about as high as broad, but gradually more and more compressed towards the telson; the sixth segment is slightly longer than the two preceding segments (fig. 2*k*). The proximal joint of the exopod of the uropods reaches the end of the endopod, and its outer distal angle is obliquely cut off and furnished with a few small

spines (fig. 2 *k*); the terminal joint of the exopod is very oblong with setæ along its margins. The telson (figs. 2 *l*, 2 *m* and 2 *n*) is three and a half times as long as broad; each lateral margin bears along its distal fourth 2 very long spines, 6 or 7 short spines, increasing gradually in length backwards, between the two long ones, and four short spines along the distal half of the distance between the base and the proximal very long spine. At the insertion of the distal pair of long spines the telson is somewhat constricted; its terminal portion is an ovate plate, the posterior margin of which is very convex and divided by five (in the half-grown specimen by four) deep incisions into 6 (respectively 5) spiniform processes; from the bottom of each incision projects a long, feathery seta.

Length of a female with marsupium ca. 18 mm.

Remarks. — The three specimens captured are very mutilated and badly preserved. One of them is only half-grown; in spite of the aberrant shape of the front end of the carapace it belongs certainly to this species. The shape of the mouth-parts may be seen on the figures, and a detailed description of labrum, mandibles, etc., is scarcely needed.

Gnathophausia Will.-Suhm.

The main sources to our knowledge of this large genus is G. O. Sars' "Challenger" Report and Ortmann's valuable paper: Schizopod Crustaceans in the U. S. Nat. Mus. — The Families Lophogastridæ and Eucopiidæ (Proc. U. S. Nat. Mus. Vol. XXXI, 1906). The "Siboga" captured only 3 species, all known from the "Challenger".

3. *Gnathophausia longispina* G. O. Sars.

1883. *Gnathophausia longispina* G. O. Sars, Forh. Vid. Selsk. Christiania for 1883, N° 7, p. 8.
1885. *Gnathophausia longispina* G. O. Sars, Challenger Rep. Vol. XIII, p. 46, Pl. VII, figs. 1—5, Pl. VIII.
1906. *Gnathophausia longispina* Ortmann, Proc. U. St. Nat. Mus. Vol. XXXI, p. 41.

Stat. 38. April 1. Lat. 7° 35'.4 S., long. 117° 28'.6 E., 521 m. Trawl. 19 specimens, but the majority far from full-grown.
Stat. 314. February 17. Lat. 7° 36' S., long. 117° 30'.8 E. 694 m. Trawl. 3 specimens.

The largest male measures 68 mm. from the tip of the rostrum to the end of the telson; the posterior lateral lappet of its second abdominal segment is nearly as long as the segment itself. A female with the marsupium fully developed measures 64 mm.; another female with brood is a little smaller. These measurements are the largest hitherto recorded for both sexes of this moderately small species. Otherwise I have nothing to add to Ortmann and Sars.

4. *Gnathophausia Zoëa* Will.-Suhm.

1875. *Gnathophausia zoëa* Will.-Suhm, Trans. Linn. Soc. Lond. (Zool.) Ser. 2, Vol. I, p. 32; Pl. IX, figs. 2—15, Pl. X, fig. 4.
1885. *Gnathophausia zoëa* G. O. Sars, Challenger Rep., p. 44, Pl. VI, figs. 6—10.
1885. *Gnathophausia willemoesii* G. O. Sars, Challenger Rep. p. 38, Pl. V, figs. 1—6.
1891. *Gnathophausia sarsi* Wood-Mason, Ann. Mag. Nat. Hist. Ser. 6, Vol. VII, p. 187.

1906. *Gnathophausia zoëa* Ortmann, Proc. U. St. Nat. Mus. Vol. XXXI, p. 42, Pl. II, fig. 2*a*, 2*b*.
1906. *Gnathophausia zoëa sarsi* Ortmann, l. c. p. 42.

Stat. 35. March 28. Lat. 8° 0′.3 S., long. 116° 59′ E. 1310 m. Deep-sea trawl. 1 specimen.
Stat. 185. September 12. Lat. 3° 20′ S., long. 127° 22′.9 E. HENSEN vertical net, from 1536 m. to surface. 1 specimen.
Stat. 284. January 18. Lat. 8° 43′.1 S., long., 127° 16′.7 E. 828 m. Deep-sea trawl. 1 specimen.

The three specimens are of very moderate size, none among them being full-grown. They show nothing worth mentioning.

The synonymy list shows that I follow ORTMANN in withdrawing *G. Willemoësii* G. O. S., and that I go a small step further in considering *G. Sarsii* W.-M. merely as a synonym, not as a variety. In the British Museum (Natural History) I examined the two specimens described by G. O. SARS, but, as mentioned by this author, the rostrum is mutilated in both specimens, and the large specimen measures only 108 mm. from the end of telson to the bottom of the incision between rostrum and one of the supra-orbital spines, while the other specimen has been at most 104 mm. to the tip of the rostrum before its mutilation. This smaller specimen disagrees with SARS' description of the species in some particulars: the outer spine of the antennal squama projects a little beyond the end of the lamellar lobe, and a portion of the outer margin of the squama is extremely finely serrated; furthermore the postero-dorsal process is finely serrated along its lower margin, and four larger teeth are found on the basal portion of this process and downwards along the posterior margin of the carapace. In all these particulars this smaller specimen agrees with *G. Zoëa* and differs from *G. Willemoësii* as described by SARS, and *G. Willemoësii* ought to be united with *G. Zoëa*. — Professor A. ALCOCK kindly lent me the type of *G. Sarsii* Wood-Mason for examination, and I arrived at the result that it is identical with *G. Zoëa*.

5. *Gnathophausia elegans* G. O. Sars.

1883. *Gnathophausia elegans* G. O. Sars, Forh. Vid. Selsk. Christiania for 1883, N° 7, p. 7.
1885. *Gnathophausia elegans* G. O. Sars, Rep. Challenger Rep. p. 42, Pl. VI, figs. 1—5.
1906. *Gnathophausia elegans* Ortmann, Proc. U. St. Nat. Mus. Vol. XXXI, p. 51.

Stat. 141. August 5. Lat. 1° 0′.4 S., long. 127° 25′.3 E. 1950 m. HENSEN vertical net, from 1500 m. depth to surface. 1 specimen.
Stat. 143. August 7. Lat. 1° 4′.5 S., long. 127° 52′.6 E. 1454 m. HENSEN vertical net, from 1000 m. depth to surface. 2 specimens.
Stat. 314. February 17. Lat. 7° 36′ S., long. 117° 30′.8 E. 694 m. Trawl. 3 specimens.

In my specimens and in the type-specimens of SARS the anterior tooth on the lower lateral margin of sixth abdominal segment is considerably in advance of the lower end of the line dividing the segment transversely; in his fig. 1 SARS has placed this tooth close at the end of the dividing line. In all my specimens each of the five anterior abdominal segments has a triangular, acute projection at the posterior dorsal margin; on the two first segments these projections are very conspicuous, as large as in *G. Zoëa*, but on the following segments they are a good deal smaller and besides gradually smaller behind. In all specimens the branchiostegal lobe is somewhat protruding, subangular, with the tip rounded; the outer margin of the antennal

squama is always smooth. The marginal rim of the carapace leaves a laminar expansion at the lower part of the posterior margin; this expansion is narrow in the smaller specimens, broader and well developed in two adult females. Some of the features enumerated show that the "Siboga" specimens are intermediate between the specimen described and figured by SARS and that examined by ORTMANN.

The largest specimen, a female with marsupium fully developed, measures 52.4 mm.; the smallest specimen is 41.5 mm. — It may be added that the two stations 141 and 143 show that the specimens were taken in intermediate layers and at least about 450 m. from the bottom.

II. Family EUCOPIIDÆ G. O. Sars.

Eucopia Dana.

In Bull. Mus. Oc. Monaco N° 42, 1905, I stated that G. O. SARS in his Challenger Report "has mixed together at least three species of *Eucopia*", that *E. australis* Dana is a very large antarctic species which differs not only from *E. sculpticauda* Faxon but from *E. unguiculata* Will.-Suhm, finally that the "Siboga" material contains a large female, which I was unable to refer to any previously known species. ORTMANN (1906) adopted my view that *E. australis* Dana ought to be separated from *E. unguiculata* W.-S., but the localities for the specimens referred by him to *E. australis* suggest that they do not belong to DANA's antarctic species but to *E. major* n. sp. secured by the "Siboga" and described below, and the fact that I have specimens captured by Prof. A. AGASSIZ in the Pacific supports that suggestion. During a stay in London 1907 I examined the "Challenger" Schizopoda preserved in the British Museum (Natural History), and I found 4 specimens referred by SARS to *E. australis* Dana. Among these a specimen from Stat. 107 and marked "male" and "type" on the label belongs to *E. sculpticauda* Faxon; a specimen from Stat. 50 (in North Atlantic) belongs to *E. unguiculata* Will.-Suhm, and two specimens from Stat. 158 (lat. 50° 1′ S., long. 123° 4′ E.) belong to *E. australis* Dana, and one of these is about half-grown, while the other is an adult female measuring about 50 mm. in length. — Finally I established (Bull. Mus. Oc. Monaco, N° 30, 1905) *E. intermedia* on a single specimen, but a subsequent study of much more material gave the result that the characters pointed out — though very striking — are due to age, the specimen being a very young *E. sculpticauda* Faxon with the anterior thoracic legs considerably more slender than in the adults and with a telson differing from that of the adult in possessing no "network of ridges enclosing honeycomb-like cells" on its surface and showing no lateral constriction a little in front of the tip. Consequently *E. intermedia* H. J. H. must be cancelled and referred as a synonym to *E. sculpticauda* Fax.

Thus the genus *Eucopia* comprises at present 4 species. The following key gives the distinguishing characters of the adults and of specimens somewhat more than half-grown; in half-grown or still smaller specimens some of the characters (length of eye-stalks, adornment on the surface of telson, relative length of the distal joint of the exopod of the uropods) are less

developed, wherefore such specimens ought to be determined by aid of comparison with full-grown individuals. The "Siboga" material comprises two species, *E. unguiculata* Will.-Suhm and *E. major* n. sp., but as *E. sculpticauda* Faxon is known from the Pacific, the Bay of Bengal, the Arabian Sea and the Atlantic, it is probably a mere accident that it was not taken by the "Siboga".

Key to the Species of *Eucopia*.

A. Telson with a lateral constriction somewhat in front of the end, with a network of ridges enclosing honeycomb-like cells on a rather long part of the upper surface, and without a pair of long terminal spines. Gnathopods robust, their sixth joint scarcely more than twice as long as deep . . . . . *E. sculpticauda* Faxon.

B. Telson without any distal lateral constriction and without rounded dorsal impressions or cells, but with a single pair of long terminal spines. Gnathopods slender, their sixth joint at least about four times as long as deep.

a. Anterior margin of the frontal plate feebly convex. The eyes look essentially outwards, occupying more than one-third, frequently about two-fifths, of the outer margin of the whole appendage (stalk + cornea). (Terminal joint of the exopod distinctly broader than long). Species of very moderate size, measuring generally 27—30 mm., at most 38 mm. . . . . *E. unguiculata* Will.-Suhm.

b. Anterior margin of the frontal plate very convex. The eyes look essentially forwards, occupying less than one-fourth of the outer margin of the whole appendage. Large forms, measuring 40—70 mm. in length.

α. Terminal joint of the exopod of the uropods slightly broader than long. Eye-stalks (with eyes) scarcely twice as long as broad. Large species . . . . . *E. major* n. sp.

β. Terminal joint of the exopod of the uropods a little longer than broad. Eye-stalks (with eyes) more than twice as long as broad. Very large species . . . . . *E. australis* Dana.

6. *Eucopia unguiculata* Will.-Suhm. Pl. I, fig. 3*a*.

1875. *Chalaraspis unguiculata* Willemoës-Suhm, Trans. Linn. Soc. Lond. Ser. 2, Vol. 1, p. 37, Pl. VIII (At least partly).
1905. *Eucopia unguiculata* H. J. Hansen, Bull. Mus. Oc. Monaco, N° 42, p. 3.

Stat. 211. September 25. Lat. 5° 40′.7 S., long. 120° 45′.5 E. 1158 m. Deep-sea trawl. 1 specimen.
Stat. 230. November 14. Lat. 3° 58′ S., long. 128° 20′ E. HENSEN vertical net, from a depth of 2000 m. to surface. 1 specimen.

Stat. 243. December 2. Lat. 4° 30′.2 S., long. 129° 25′ E. HENSEN vertical net, from a depth of 1000 m. to surface. 1 specimen.

The specimen from Stat. 230 is a female with brood; it measures 33 mm. in length.

7. *Eucopia major* n. sp. Pl. I, figs. 4*a*—4*b*.

Stat. 35. March 28. Lat. 8° 0′.3 S., long. 116° 59′ E. 1310 m. Deep-sea trawl. 1 specimen (fragment).

Stat. 134. July 28. Lat. 2° 50′.5 N., long. 126° 53′.7 E. 2291 m. Deep-sea trawl, did not reach the bottom. 1 specimen (type).

(Stat. 148. August. 10. Lat. 0° 17′.6 S., long. 129° 14′.5 E. 1855 m. HENSEN vertical net, from 1000 m. depth to surface. 1 specimen, very young, probably belonging to this species).

The type is a badly preserved female with marsupium; it is 42 mm. long. The key to the species gives all characters observed: the species is similar to *E. unguiculata* in the relative length and breadth of the terminal joint of the exopod of the uropods but differs sharply in the direction and position of the cornea and in the curvature of the front margin of the carapace; the differences between *E. major* and *E. australis* are seen in the key.

B. Suborder MYSIDA.

This suborder comprises two families; both are represented in the collection.

I. Family PETALOPHTHALMIDÆ Czern.

The family comprises 4 genera, viz. *Petalophthalmus* Will.-Suhm, *Hansenomysis* Stebb., *Scolophthalmus* Faxon, and *Ceratomysis* Faxon. Only the last-named genus is represented in the "Siboga" material.

Ceratomysis Faxon.

This most interesting genus was established by FAXON on a species, of which he had but a single specimen. A closely allied species was secured by the "Siboga".

8. *Ceratomysis egregia* n. sp. Pl. I, figs. 5*a*—5*c*; Pl. II, figs. 1*a*—1*d*.

Stat. 45. April 6. Lat. 7° 24′ S., long. 118° 15′.2 E. 794 m. Bottom fine grey mud with some radiolariæ and diatoms. Deep-sea trawl. 1 specimen (adult ♂).

Stat. 88. June 20. Lat. 0° 34′.6 N., long. 119° 8′.5 E. 1301 m. Bottom fine, grey mud. Deep-sea trawl. 1 specimen (immature ♀).

Description. — The cephalothorax is somewhat shorter than the abdomen minus the telson; its two posterior segments are as usually in this family completely exposed (Pl. I, fig. 5*a*). The carapace is armed with spines, in reality spiniform processes, nearly as in *C. spinosa* Faxon:

in front of the cervical groove three long spines along the median line (Pl. II, fig. 1 *a*) and the first among them situated on the transverse front margin; the antero-lateral angles produced into extremely long spines, below each of these spines a somewhat shorter spine (Pl. I, fig. 5), and somewhat behind the antero-lateral spine a third rather long spine. The spines on that major part of the carapace which is situated behind the cervical groove, may be seen on the two figures already referred to: in the male I counted on this part seventeen pairs of spines and a single unpaired spine, in the female twenty pairs of spines and a single very long and robust, unpaired spine. Each of the two free abdominal segments has three spines, viz. one in the median line and one on each side somewhat above the base of the legs. First abdominal segment has four spines on each side, a single vertical spine below in the median line, and dorsally in the median line near the posterior margin a very long and thick, deeply bifid spine (fig. 1 *a*), finally in the male — but not in the female drawn — an unpaired, moderately long spine dorsally near the front margin. Second abdominal segment armed as the first excepting that a front unpaired dorsal spine is wanting in both specimens. Third segment has an unpaired dorsal spine near the posterior margin, a spine below in the median line and three pairs of lateral spines. Fourth segment has no ventral spine but is otherwise armed as the third. Fifth and sixth segments each with a dorsal spine in the median line and two pairs of lateral spines at the hind margin.

The eye-stalks project from the visible ocular segment (Pl. II, fig. 1 *a*, *os.*) as moderately long, quite normal spines without vestige of cornea. In the antennulæ the first joint of the peduncle is longer than broad, the two other joints are broader than long and together only a little longer than the first; in the female (Pl. I, fig. 5 *a*) both flagella are slender, many-jointed, moderately long and the inner flagellum somewhat longer than the outer; in the male (Pl. II, fig. 1 *a*) the inner flagellum is shaped as in the female, while the outer is very thickened from the base to near the beginning of the distal fifth, where it tapers somewhat suddenly and the short terminal part is very slender. The antennæ have the outer angle of the terminal joint of the peduncle produced in a very long, slender spine (Pl. I, fig. 5 *b*); the endopod reaches somewhat beyond the end of the inner antennular flagellum (Pl. II, fig. 1 *a*); the squama is long, a little less than half as long as the endopod, about 11 times as long as broad, a little tapering to the blunt end, with the inner margin a little concave and the outer convex, both margins furnished with long setæ excepting on their proximal part, and the outer margin besides with 6 spines in the adult male, 4—5 spines in the immature female, spread with somewhat irregular intervals.

The mandibular palps are long, reaching somewhat beyond the distal end of the antennular peduncles (Pl. II, fig. 1 *a*); their third joint is flattened, with numerous stiff and long setæ along both margins. The maxillipeds (Pl. I, fig. 5 *c*) are robust; fourth joint is produced into a very short lobe with a number of short marginal spines; the fifth joint with three long lateral spines, the sixth with four long and strong spines, and the seventh with three (four) similar terminal spines. The gnathopods (Pl. II, fig. 1 *b*) are nearly twice as long as the maxillipeds, flattened; the three proximal joints have no vestige of lobes; the fourth joint itself is very short at the outer margin, but on the inner side produced into an extremely large lobe

about three times as long as broad, a little curved and very closely set with setæ along its inner margin.

First to third pairs of legs are similar in structure, gradually longer behind, so that the third pair are about as long as the cephalothorax; the end of these legs is built as in the corresponding legs of *Hansenomysis Fyllæ* H. J. H. [1]). Fourth pair of legs considerably longer than the cephalothorax (Pl. I, fig. 5*a*), somewhat longer than the following pairs; seventh joint and the claw constitute together a very long "claw" as in *Hansenomysis* [2]).

The pleopods in the female (Pl. I, fig. 5*a*) increase much in length from first to fourth pair, but the fifth pair are even slightly longer than the sum of fourth and fifth segments; all these appendages are simple, without any inner ramus. — The pleopods in the male are well developed; the rami of the various pairs are built essentially as in *Hansenomysis Fyllæ* [3]), but more slender than in this smaller form.

The uropods (Pl. II, fig. 1*c*) are far from reaching the end of the telson; their rami are very slender with setæ along both margins. The exopod, which is a little shorter than the endopod, has its distal part marked off by an articulation; the proximal joint has in the female specimen a long spine at its distal outer angle and on the left exopod besides a small spine beyond the middle of the outer margin, while in the male specimen two closely set spines are found at the distal angle and two other spines on the outer margin.

The telson (Pl. II, figs. 1*c* and 1*d*) is very long, nearly as long as the sum of the three preceding segments (Pl. I, fig. 5*a*), narrow, more than six times as long as broad, broadest near the base, then a little tapering, but in the female specimen widening again very slightly from the end of the first third to the end which is cut off with the margin feebly convex. The lateral margins, excepting their proximal fourth, are closely set with spines, several of which are long, while numerous short or very spines are distributed in the intervals. Each postero-lateral angle has in the female specimen a very long and strong spine (Pl. II, fig. 1*d*), the terminal margin two moderately long and some five much shorter spines. In the male specimen the lateral margins of the telson are feebly converging in their distal third, but the armature of the transverse terminal margin is broken off.

Length of the adult male 27 mm., of the female with the marsupium half developed 25 mm.

Remarks. — As already stated *C. egregia* is closely allied to *C. spinosa* Fax., but a comparison between the "Siboga" animals and the description and figures given by Faxon reveals several differences of specific value. In *C. spinosa* the large dorsal spine on the first abdominal segment is deeply bifid, while the corresponding spine on second segment is simple; in *C. egregia* both these spines are bifid. The abdomen is proportionately longer in *C. egregia* than in *C. spinosa*, the fifth pair of pleopods in the female are much longer than in *C. egregia* (and without lateral branch). Judging from Faxon's fig. 1 on pl. LXI the antennal squama and the exopod of the uropods in *C. spinosa* have several more spines along their outer margin than in *C. egregia*. Finally Faxon describes the lateral margins of the telson in *C. spinosa* as

1) Comp. fig. 5*g* on pl. VII in Vid. Medd. Naturhist. Foren. Kjöbenhavn for 1887.
2) Comp. fig. 5*h* on pl. VII in the same book.
3) Comp. figs. 4*d*—4*h* on pl. IV in "Ingolf" Crust. Malac. I.

"setose", but in *C. egregia* a number of long and strong spines and numerous small spines but no setæ are found.

II. Family Mysidæ Dana.

A synopsis of the subdivisions of this family is given above. Six subfamilies are enumerated, and all excepting the Mysidellinæ are represented in the "Siboga" collection.

Subfamily I. Boreomysinæ Holt & Tatt.

The essential characters of this subfamily are put together in the synopsis on p. 11. Only a single genus, *Boreomysis* G. O. Sars, is known, as *Arctomysis* Czern. is a still-born genus founded on a minor error in Kröyer's description of *Mysis arctica* Kr.

Boreomysis G. O. Sars.

A detailed diagnosis of this genus is found in G. O. Sars: Monogr. Norges Mys. III, p. 8—9.

A good number of species were established by various authors: *B. arctica* Kr., *B. nobilis* G. O. S., *B. trideus* G. O. S., *B. megalops* G. O. S., *B. obtusata* G. O. S., *B. microps* G. O. S. (= *subpellucida* H. J. H.), *B. rostrata* Illig, *B. semicoeca* H. J. H., *B. scyphops* G. O. S. and *B. distinguenda* H. J. H. An eleventh species, *B. californica* Ortm., seems to be insufficiently described for certain recognition. The "Siboga" material contains some few specimens belonging to three species, all new to science.

Key to the Species from the "Siboga".

A. Most of the marginal spines along the distal half of the telson moderately large and subequal in length, with very few small spines intermingled. . *B. plebeja* n. sp.

B. The large majority of marginal spines along the distal half of the telson small, and larger spines distributed with nearly regular intervals between the small ones.

a. Outer margin of the exopod of the uropods with a couple of spines considerably longer from the base than the exopod is broad. . . . *B. Sibogæ* n. sp.

b. Outer margin of the exopod of the uropods apparently without spines at the distal end of the naked part which is very short, considerably shorter than the breadth of the exopod. . . . . *B. inermis* n. sp.

9. *Boreomysis plebeja* n. sp. Pl. II, figs. 2*a*—2*d*.

Stat. 143. August 7. Lat. 1°4′.5 S., long. 127°52′.6 E. 1454 m. Hensen vertical net, from 1000 m. depth to surface. 1 immature specimen.

Description. — Frontal plate considerably produced, with the margins feebly convex,

the front angle a little less than 90° and besides the tip a little acuminate (fig. 2*a*). Eyes somewhat small, narrower than the stalk beyond the middle (fig. 2*a*), as deep as broad, light brownish; the eye-stalks not depressed, with the upper tubercle considerably protruding (fig. 2*b*). Antennal squama (fig. 2*c*) four times as long as broad, broadest at the middle, with the inner margin distinctly a little more curved than the outer; the terminal lobe is well developed, almost half as long as broad, thus considerably overreaching the marginal tooth.

Exopod of uropods very slender, with nearly the proximal fourth of its outer margin naked, and a small spine at the end of this naked part. Telson (fig. 2*d*) slightly more than three times as long as broad, with its distal half less narrow than in most other species of the genus, at the narrowest place more than half as broad as its proximal broad part; the terminal cleft, which occupies one-sixth of the total length, has its proximal part narrow, triangular; the spines along the lateral margins are comparatively few in number, most of them moderately long, only the proximal ones shorter and besides on each side a very short spine between much longer spines.

Length of the young specimen 8.2 mm.

Remarks. — This species is in general aspect similar to *B. microps* G. O. S., but is instantly distinguished by the spinulation of the lateral margins of the telson. The specimen shows no trace of marsupial lamellæ and is scarcely more than half-grown, but though the shape of the squama and the telson differs somewhat according to age in the forms of *Boreomysis*, I think that the description and figures given may be sufficient for the determination of adult specimens.

10. *Boreomysis Sibogæ* n. sp. Pl. II, figs. 3*a*—3*e*.

Stat. 185. September 12. Lat. 3° 20′ S., long. 127° 22′.9 E. HENSEN vertical net, from 1536 m. depth to surface. 3 (? 4) specimens.

Description. — Frontal plate very moderately produced, with the margins somewhat convex (fig. 3*a*) and the front angle between them nearly 120°, but the end itself is produced into a moderately small, triangular, acuminated rostrum. Eyes moderately large, considerably broader than deep (figs. 3*a*—3*b*), broader than the end of the stalk, very light brownish and somewhat shining; eye-stalks short, with the upper surface flattened and the distal tubercle feebly prominent, seen from above somewhat broader than long, with the lateral margins strongly diverging. Antennal squama (fig. 3*c*) somewhat less than four times as long as broad, broadest considerably before the middle; the outer margin is straight or at the middle feebly concave; a terminal lobe is rudimentary or wanting, the outer marginal tooth overreaching the transverse end.

Exopod of uropods (fig. 3*d*) somewhat slender, with a couple of spines a little beyond the end of the proximal fourth of the outer margin, and this proximal part as usually naked. Telson (fig. 3*e*) proportionately broad, slightly more than three times as long as broad, at the narrowest place almost half as broad as slightly beyond the base and distinctly broader near the end than somewhat before the bottom of the cleft; the terminal cleft, which occupies one-fourth

of the length, has its most proximal part shaped as a moderately broad triangle; the spines along the lateral margins are very numerous, very unequal in size but nearly regularly arranged, in the large specimen two or three short spines, in a smaller specimen only a single short spine, being placed in the interval between two much longer spines, but near the distal end and towards the base of the spiniferous part of the margins this regularity gradually disappears, as the spines near both ends are more uniform in length.

Length of the largest specimen, a female with the marsupium half-developed, 21 mm.

Remarks. — This species is allied to *B. arctica* Kr., but in the latter form the squama is much longer and narrower and the telson decreases feebly in breadth from before the middle to the end. The material to hand comprises a female with the marsupium half-developed, a younger female and the cephalothorax of a scarcely adult male. But in the same bottle I found the cephalothorax of a fourth specimen which is far from adult and has a large Epicarid attached to the skin between the eyes; in this specimen the squama is shaped as in *B. Sibogæ*, but the eyes are smaller and the eye-stalks not depressed, wherefore I cannot decide with certainty whether this specimen belongs to *B. Sibogæ* or to another species; I am apt to think that it belongs to *B. Sibogæ* and may venture the hypothesis that the reduction of the eyes may be due to the influence of the parasite.

11. *Boreomysis inermis* n. sp. Pl. II, figs. 4*a*—4*c*.

Stat. 141. August 5. Lat. 1° 0′.4 S., long. 127° 25′.3 E. 1950 m. HENSEN vertical net, from 1500 m. depth to surface. 1 specimen, ♂.

Description. — Frontal plate considerably produced, with the anterior part of the lateral margins very convex and then directed inwards forming a flatly convex front margin, at the middle of which a small, triangular, acute rostrum is seen (fig. 4*a*). Eyes somewhat smaller than in *B. Sibogæ*, not fully as deep as broad, as broad as the end of the stalk, very light brownish; eye-stalks scarcely depressed, much broader than long, with the tubercle very prominent. Antennal squama (fig. 4*a*) more than three times as long as broad, broadest somewhat before the middle; the outer margin feebly concave; the terminal lobe very short, slightly longer than the short marginal tooth.

Exopod of third pair of pleopods rather considerably longer than the endopod and a little longer than the exopod of second pair. Exopod of uropods (fig. 4*b*) with the margins subparallel and the outer margin setose to rather near the base, the naked part being unusually short, considerably shorter than the breadth of the exopod, apparently without spines at the end; endopod of uropods with a single long spine on the inner margin at some distance from the base. Telson (fig. 4*c*) three and a half times as long as broad, distally narrow, at the narrowest place somewhat less than half as long as broad near the base and the distal third with the lateral margins conspicuously diverging towards the end; the cleft, which occupies less than one-sixth of the total length, has the proximal part laterally marked off, triangular, with an extremely narrow slit at the bottom. Judging from the small incisions along the lateral margins of the telson each margin has possessed six spines much or very much longer than

the spinules, the first, which is still preserved, being the shortest and situated somewhat before the middle, while the last, which probably was very long, has been inserted opposite the bottom of the cleft; each interval between two of these spines is occupied by several small spinules.

Length of the specimen, an adult male, 16 mm.

Remarks. — *B. inermis* is easily distinguished from all other species of *Boreomysis* by having the naked part of the outer margin of the exopod of the uropods so unusually short as described above. The shape and armature of the telson show other valuable characters.

Subfamily II. Siriellinæ Norm.

The essential characters are given in the synopsis on p. 11. But some other features may be mentioned. Body slender. Carapace short or very short. Eyes well developed. Antennal squama with the outer margin naked and terminating in an acute tooth. Mandibles with the molar tubercle feebly developed, sometimes shaped as a distally blunt process; the development of the cutting edge, the lacinia mobilis and the setæ exceedingly varying. Maxillæ narrow; lobe from third joint feebly cleft; exopod rather small; distal joint of the palp very oblong, longer than the proximal joint. Maxillipeds somewhat slender; the lobe from second joint rudimentary or wanting. Gnathopods simple; sixth joint very oblong.

Fig. 1 *h* on pl. VI shows the arrangement of the setæ constituting the terminal brush on sixth joint of the thoracic legs; each seta consists of a basal glabrous part and a distal much longer portion built in the most peculiar way. On fig. 1 *i a.* shows the terminal part of a seta seen from above, and *b.* the same seta from the side, and it is easily seen that the seta itself seems to be furnished with a not quite close row of plates which seen from the side are similar to very flat cups.

Only a single genus, *Siriella* Dana, was hitherto known. The "Siboga" captured an enormous material of the subfamily; the major part belongs to *Siriella*, but a couple of species are so aberrant, that a new genus, *Hemisiriella*, is to be established for their reception.

Key to the Genera.

First pair of thoracic legs at least slightly shorter than second pair, with the "claw" (seventh joint + the real claw) very well developed. The carapace covers at least a part of the sides of the penultimate thoracic segment. *Siriella* Dana.

First pair of thoracic legs extremely elongated, almost twice as long as the second pair, with the "claw" rudimentary. The carapace unusually short, not covering any part of the penultimate thoracic segment . . . . . *Hemisiriella* n. gen.

Siriella Dana.

In his work on the Mediterranean Mysidæ G. O. Sars gave a very elaborate description of this genus. In the key the main characters distinguishing this genus from *Hemisiriella* n. gen.

are given, but some additional features may be pointed out. The third joint of the antennular peduncle in the female is conspicuously more than half as broad as long and much shorter than first joint. The antennal squama reaches beyond the end of the third joint of the endopod. In both mandibles the cutting edges are furnished with saw-teeth, the edge of the left mandible is nearly transverse, that of the right extremely oblique; a broad, lamellar, distally serrated lacinia mobilis is found on the left mandible but completely wanting on the right; the setæ are spiniform on both mandibles, longer but generally less numerous on the left than on the right mandible; the molar tubercle is short and very small. — As to the peculiar development in a number of species of the fourth pair or of both third and fourth pairs of pleopods in the male I refer to the general description given above on p. 8—9 and to the following descriptions of the species.

The "Siboga" collection contains not only an enormous quantity of specimens belonging to this genus, but even the number of species is astonishing: in the following I enumerate 13 species, 11 of which are established as new to science. Hitherto only 7 valid and recognisable species were described, viz. *Siriella norvegica* G. O. S., *S. Clausii* G. O. S., *S. jaltensis* Czern. (= *S. crassipes* G. O. S.), *S. armata* H. M.-Edw. and *S. frontalis* H. M.-Edw. from the European seas, *S. Thompsonii* H. M.-Edw. from the open Atlantic and the Pacific, and *S. gracilis* Dana from the Pacific and the Arafura Sea, while *S. Paulsoni* Kossm. from the Red Sea, established on a single adult female, may perhaps be recognized when the adult male has been found at the original locality, and *S. pacifica* Holmes from California ought to be re-examined. I put this remark because *S. Paulsoni* Kossm. and probably *S. pacifica* Holmes belong to a group of the genus, whose forms must be established on full-grown males, as the females in two or three cases cannot be separated with certainty, while the males show excellent specific characters in the fourth pair of pleopods. All other species established by various authors are either untenable, being mere synonyms, or quite unrecognisable.

Among the 13 species captured by the "Siboga" only 3 (1 of them new) have been taken by other expeditions in the open Ocean, and the majority live probably only in the seas or sounds of the Indian Archipelago. The area explored by the "Siboga" evidently offers excellent conditions for the development of this genus. It may be added that in foot-notes I establish 2 new species from Asia not captured by the "Siboga", while a third new species represented by a single "Siboga" specimen too mutilated for description is omitted.

Key to the Asiatic Species of *Siriella*.

1. End of telson with three small spines at the middle and a single pair or two pairs of more lateral long spines . . . . . 2.
1. End of telson without small spines but with three (four) pairs of very long spines . . . . . *S. dubia* n. sp.
2. Endopod of uropods conspicuously overreaching the exopod. . . . . 3.
2. Endopod of uropods at most as long as, generally shorter than, the exopod . . . . . 4.

3. Eyes large. Antennal squama narrow, at least about five times as long as broad . . . . . *S. Thompsonii* M.-Edw.

3. Eyes small. Antennal squama moderately broad, about three times as long as broad . . . . . *S. gracilis* Dana.

4. Telson with two pairs of long terminal spines, the outer pair somewhat longer than the inner. (Exopod of uropods with 6 to 9 marginal spines) . . . . . *S. quadrispinosa* n. sp.

4. Telson with a single pair of very long terminal spines close at the three small median spines and much longer than the pair at their outer side . . . . . 5.

5. At most nearly one-third of the margin of the proximal joint of the exopod of the uropods furnished with spines. Spines along the distal third or at least almost the distal fourth of the lateral margins of the telson increasing regularly in length backwards. The rami of fourth (and third) pair of male pleopods subsimilar in length, with all their distal setæ normal as in the other pairs . . . . . 6.

5. More than half of the margin of the proximal joint of the exopod of the uropods furnished with spines. Spines along the distal third of the lateral margins of the telson very irregular, as smaller or small spines are intermingled between considerably larger spines. The endopod or both rami of fourth (in one species besides the endopod of third) pair of male pleopods with the most distal setæ peculiarly developed and the rami in question a little elongated. . . . . 8.

6. Third pair of thoracic legs about two-thirds as long again as first pair. Female with two nodiform conspicuous protuberances in the median line of the carapace. . . . . *S. nodosa* n. sp.

6. Third pair of thoracic legs not elongated, less than one-third as long again as first pair. No protuberances in the median line of the carapace . . . . . 7.

7. Antennal squama with the terminal lobe unusually long, at least two-thirds as long as broad. . . . . *S. vulgaris* n. sp.

7. Antennal squama with the terminal lobe always less than two-thirds and frequently only half as long as broad. . . . . *S. affinis* n. sp.

8. The endopod of the uropods reaches about or quite the end of the exopod. Abdomen with black lateral spots. (Male pseudobranchial rami not spirally twisted) . . . . . *S. æquiremis* n. sp.

8. The exopod of the uropods conspicuously overreaches the endopod. Abdomen without black lateral spots. . . . . 9.

9. Male pseudobranchial rami on second to fourth pairs of pleopods spirally twisted. Distal joint of the exopod of the uropods not half as long as the proximal and at most twice, frequently somewhat

less than twice, as long as broad. Fourth pair of male pleopods with both rami terminating in very modified setæ . . . . . 10.

9. Male pseudobranchial rami on second to fourth pairs of pleopods not twisted but nearly straight. Distal joint of the exopod of the uropods more than half as long as the proximal joint and considerably more than twice as long as broad. Fourth pair of male pleopods with the exopod normal, the endopod a little or somewhat elongated with the terminal setæ modified . . . . . 13.

10. Antennal squama with some spines along the outer margin . . *S. serrata* n. sp.

10. Antennal squama without spines (the terminal denticle not included) along the outer margin . . . . . 11.

11. Both rami of fourth pair of male pleopods with one of their two feebly curved setæ of the terminal joint extremely long and thick, more than twice as long as the other seta. . . . . *S. inornata* n. sp.

11. Both rami of fourth pair of male pleopods with their two terminal setæ of moderate length, considerably curved . . . . . 12.

12. Lateral branches of the two feathered setæ on the end of the telson extremely thin, far from easily visible . . . . . *S. media* n. sp.

12. Lateral branches of the two feathered setæ on the end of the telson strong, very conspicuous. . . . . *S. plumicauda* n. sp.

13. In the male the antennal squama with the terminal lobe extremely elongated, so that the denticle is placed at the middle of the outer margin; the endopods of fourth and third pairs of pleopods with the terminal setæ considerably modified. . . . . *S. anomala* n. sp.

13. In the male the antennal squama shaped as in the females, with the terminal lobe much broader than long; only the endopods of fourth pair of pleopods with the terminal setæ modified . . . . . 14.

14. The outer seta of the penultimate joint of the endopod of fourth pair of male pleopods plumose, not thickened and not reaching the end of the outer extremely long and very thick seta of the terminal joint. . . . . *S. distinguenda* n. sp.

14. The outer seta of the penultimate joint of the endopod of fourth pair of male pleopods naked, thickened and considerably over-reaching the end of the outer very moderately long seta of the terminal joint. . . . . *S. conformalis* n. sp.

These 15 Asiatic species may be divided into four natural groups.

Group 1. End of telson with three small spines at the middle and a single pair or two pairs of more lateral, long spines. Proximal joint of the endopod of the uropods with less than half of its outer margin furnished with spines, and at least almost twice as long as the distal joint, which is at most scarcely twice and generally considerably less than twice as long as broad.

Proximal widened part of the telson with a single pair or, most frequently, two pairs of marginal spines; spines along almost the distal fourth or the distal third of the lateral margins of the telson increase regularly (in *S. quadrispinosa* not quite regularly) in length backwards. The rami of fourth (and third) pair of male pleopods subsimilar in length, with all their distal setæ normal as on the other pairs. Pseudobranchial rami of second to fourth pairs of male pleopods spirally twisted.

12. *Siriella Thompsonii* H. Milne-Edw.

1837. *Cynthia Thompsonii* H. Milne-Edwards, Hist. Nat. des Crust. T. II, p. 462.
1852. ?*Siriella vitrea* Dana, U. S. Expl. Exped., Crust. I, p. 656, Pl. 43, figs. *6a—6m.*
1852. ?*Siriella brevipes* Dana, U. S. Expl. Exped., Crust. I, p. 658, Pl. 44, figs. *1a—1q.*
1861. *Cynthia inermis* Kröyer, Nat. Tidsskr. 3. R. B. I, p. 44, Tab. II, Fig. 6, *a—g.*
1868. *Siriella Edwardsii* Claus, Zeitschr. wiss. Zool. B. XVII, p. 271, Taf. XVIII.
1882. *Siriellides indica* Czerniavsky, Mon. Mysid. I, p. 103, Tab. XXXI, figs. 1—6.
1885. *Siriella thompsoni* G. O. Sars, Challenger Rep., Vol. XIII, p. 205, Pl. XXXVI, figs. 1—24.

Stat. 96. June 27. South-east side of Pearl-bank, Sulu-Archipelago. 15 m. Surface. 14 specimens.

Protosiriella Thompsoni Czern., *Siriellides Edwardsi* Czern., *Siriella inermis* Czern. and *Siriella vitrea* Czern. are synonyms to the same species, but Czerniavsky only copied descriptions from earlier authors, erroneously considering their imperfections as characters of different species. *S. vitrea* Dana is either identical with *S. Thompsonii* or unrecognisable; *S. brevipes* is possibly an immature *S. Thompsonii*; at all events both ought to be cancelled. — Whether *Promysis Galatheæ* Kröyer belongs to this species cannot be decided; it will even for ever be impossible to recognize the form from Kröyer's description and figures as his type specimen is lost, wherefore the species ought to be cancelled in the literature as unrecognisable.

Remarks. — G. O. Sars has given an excellent representation in the "Challenger" Report of this widely distributed species, which has been taken at the surface in all tropical and warmer temperate parts of the Oceans. It agrees with *S. gracilis* Dana but differs from all other species hitherto established or seen by me by the feature that the endopod of the uropods conspicuously overreaches the exopod; the latter has 3 to 6 marginal spines. The antennal squama is narrow, at least about five times as long as broad.

13. *Siriella gracilis* Dana.

1852. *Siriella gracilis* Dana, U. S. Expl. Exped., Crust. I, p. 658, Pl. XLIV, figs. *1a—1g.*
1885. *Siriella gracilis* G. O. Sars, Challenger Rep. Vol. XIII, p. 209, Pl. XXXVI, figs. 25—28.

Stat. 35. March 28. Lat. 8° 0'.3 S., long. 116° 59' E. 1310 m. Plankton, surface. Large number of specimens.
Stat. 37. March 30/31. Sailus ketjil, Paternoster-islands. 27 m. and less. Plankton, surface. 1 specimen.
Stat. 66. May 7/8. Bank between islands of Bahuluwang and Tambolungan, south of Saleyer. 8—10 m. Plankton. 24 specimens.
Stat. 81. June 14. Pulu Sebangkatan, Borneo-bank. 34 m. Plankton. 32 specimens.
Stat. 96. June 27. South-east side of Pearl-bank, Sulu-Archipelago. 15 m. Plankton, surface. Large number of specimens.

Stat. 99. June 28/29/30. Lat. 6° 7'.5 N., long. 120° 26' E. Anchorage off North-Ubian. 16—23 m. Plankton, surface. 8 specimens.
Stat. 110. July 6. Lat. 4° 34' N., long. 122° 0' E. Plankton, surface. 11 specimens.
Stat. 117a. July 12. Lat. 1° 15' N., long. 123° 37' E. Plankton, townet. Large number of specimens.
Stat. 132. July 25. Lat. 5° 56'.7 N., long. 126° 25' E. 3302 m. Surface. 2 specimens.
Stat. 136. July 29. Ternate anchorage. 23 m. Townet. 4 specimens.
Stat. 144. August 7/9. Anchorage north off Salomakiëe-(Damar-)island. 45 m. Townet. 3 specimens.
Stat. 177a. September 1. Lat. 2° 30' S., long. 129° 28' E. Townet. 22 specimens.
Stat. 189a. September 12. Lat. 2° 22' S., long. 126° 46' E. Townet. 4 specimens.
Stat. 194. September 15. Lat. 1° 53'.5 S., long. 126° 39' E. 1504 m. Townet. 5 specimens.
Stat. 194—197. September 15. Lat. 1° 53'.5—1° 45'.3 S., long. 126° 39'—127° 8'.3 E. Townet. 7 specimens.
Stat. 223. November 6. Lat. 5° 44'.7 S., long. 126° 27'.3 E. 4391 m. Surface. 1 specimen.
Stat. 225. November 8. 5700 M. N. 279° E. from South point of South-Lucipara-island. 894 m. Horizontal cylinder. 2 specimens.
Stat. 245. December 3. Lat. 4° 16'.5 S., long. 130° 15'.8 E. 4956 m. Plankton, surface. 9 specimens.

Remarks. — This species is easily separated from *S. Thompsonii* by its small eyes and by its much broader antennal squama which is only about three times as long as broad, while it agrees with *S. Thompsonii* and differs from all other species by having the endopod of the uropods overreaching the exopod. This exopod has only 2 or 3 marginal spines. — From most of the localities females with brood are to hand, proving that the species propagates itself during the whole year.

Distribution. — According to Dana, Sars and Ortmann this species is widely distributed in the tropical Pacific, from a station between Galapagos and Acapulco to the Philippine Islands and the Arafura Sea; according to Sars it has also been taken in the North Pacific. The Copenhagen Museum possesses a good number of specimens taken by the Danish "Galathea" Expedition at two localities, viz. lat. 19° 14' N., long. 116° 6' E., and in the Bay of Bengal. The species is always taken at the surface.

14. *Siriella quadrispinosa* n. sp. Pl. II, figs. 5*a*—5*i*.

Stat. 66. May 7/8. Bank between islands of Bahuluwang and Tambolungan, south of Saleyer. 8—10 m. Plankton. Many specimens.

Description. — Body moderately slender. Frontal plate of the carapace (fig. 5*a*) in both sexes considerably produced, triangular, with the tip narrowly rounded or subacute. Eyes moderately large, black. Antennal squama subequal in both sexes (figs. 5*b* and 5*c*), not fully three times as long as broad; terminal lobe about half as broad again as long. Gnathopods (fig. 5*d*) and thoracic legs (fig. 5*e*) moderately slender; gnathopods about three-fourths as long as first pair of thoracic legs which is somewhat shorter than third pair. Male pleopods and pseudobranchial rami as described in the definition of the group.

Uropods moderately broad and subequal in both sexes (figs. 5*f* and 5*h*); exopod conspicuously overreaching the endopod, its proximal joint with 6 to 9 spines occupying less than half of its outer margin, its distal joint considerably less than half as long as the proximal and somewhat longer than broad, at most half as long again as broad. The telson reaches about the articulation of the exopod; it is moderately broad, distally a little broader in the female (fig. 5*g*)

than in the male (fig. 5*i*); its widened basal part with two pairs of very strong spines; the end is broadly rounded with 3 small spines at the middle and two pairs of long spines, the outer pair somewhat longer than the inner; the spines along the distal third of its lateral margins do not increase quite regularly in length towards the end, yet much more regularly than in *S. æquiremis*, *S. inornata* or allied forms, only the 3 last spines increase always regularly but rapidly and are closely set, while the others generally are distant from each other, varying considerably in length and arranged so that 2, 3 or 4 spines increase in length posteriorly, and then comes again a short spine; besides the lateral spines of the distal half differ from those in the following species excepting *S. nodosa* in being less numerous and, with exception of the distal ones, less closely set, some of the intervals being as long as, or considerably longer than, the preceding spines.

Length of the male 7 mm., of the female 6.5 mm.

Remarks. — This species is easily distinguished from all following forms by the armature of the telson; from the two preceding species it is separated by having the endopod of the uropods shorter than the exopod. — A female without marsupium from Stat. 66 has an enormous Epicarid, probably a species of *Notophryxus*, on the upper side of the carapace.

15. *Siriella nodosa* n. sp. Pl. III, figs. 1*a*—1*l*.

Stat. 129. July 22/23. Anchorage off Kawio- and Kamboling-islands, Karkaralong-group. 23–31 m. Plankton. 5 specimens.

Description. — The body a little more clumsy than in allied forms. Frontal plate of the carapace (fig. 1*a*) in both sexes considerably produced, triangular, with the tip narrowly rounded; in the female the cephalothorax has in the median line two, seen from the side (fig. 1*b*) obliquely triangular, protuberances, one just in front of the cervical groove, the other a little behind the middle; these protuberances are wanting in the male. Eyes moderately large, dark reddish. Antennular peduncle in the male thicker than in the other species. Antennal squama (fig. 1*c*) subequal in both sexes, three times as long as broad; terminal lobe very short, slightly overreaching the tip of the marginal denticle. Gnathopods (fig. 1*d*) considerably shorter than the somewhat slender first pair of thoracic legs, and the thoracic legs increase very much in length from first (fig. 1*e*) to third pair (fig. 1*g*), the third pair being nearly two and a half times as long as the gnathopods and two-thirds as long again as first pair; fourth to sixth pairs again somewhat shorter; it has been impossible to discover any secondary articulation of the sixth joint on any of the legs. Male pleopods and pseudobranchial rami as described in the definition of the group.

Uropods (figs. 1*h* and 1*i*) with the exopod scarcely or slightly overreaching the endopod; the rami are broad in the female (fig. 1*h*), conspicuously narrower in the male (fig. 1*i*); the exopod has only 3 or 4 marginal spines, and its distal joint is about half as long again as broad. In the female the telson (figs. 1*h* and 1*i*) is broad and proportionately short, less than twice as long as broad, not reaching the articulation of the exopod, and considerably less than half of its lateral margins is set with spines; in the male the telson (fig. 1*k*) is longer and much narrower than in the female, reaching somewhat beyond the articulation of the exopod, and

considerably more than half of its lateral margins is set with spines; in both sexes the telson has only a single pair of spines on its widened basal portion, behind these spines the telson is feebly or scarcely constricted, and its end bears a single pair of very long spines, while its usual three spines between this long pair are short though scarcely or slightly shorter than the pair outside the long spines; in the male the lateral spines along almost the distal half increase regularly but feebly in length backwards, constituting a rather close row; in the female only the 5 or 6 distal spines increase regularly in length, while the remaining 2 or 3 spines are irregular both as to length and the intervals between them.

Length of a male 6.6 mm., of a female with marsupium 5.1 mm.

Remarks. — The female of this species is easily separated from all other forms by the dorsal protuberances on the carapace; both sexes are distinguished by the enormous length of the legs of third pair as compared with those of first pair or with the gnathopods; telson and uropods afford other valuable characters.

16. *Siriella vulgaris* n. sp. Pl. III, figs. 2*a*—2*k*.

Stat. 16. March 15/16. Lat. 6° 59′ S., long. 115° 24′.7 E. Bay of Kankamaraän, S. coast of Kangeang. 22 m. HENSEN vertical net, with electric light. 30 specimens.
Stat. 36. March 29. Lat. 7° 38′ S., long. 117° 31′ E. 640 m. Plankton, surface. 5 specimens.
Stat. 37. March 30/31. Sailus ketjil, Paternoster-islands. 27 m. and less. Plankton, surface. 30 specimens.
Stat. 41. April 3. Lat. 7° 25′ S., long. 117° 50′.5 E. 96 m. Plankton, from 10 m. to surface. 19 specimens.
Stat. 66. May 7/8. Bank between islands of Bahuluwang and Tambolungan, south of Saleyer. 8—10 m. Plankton. Large number of specimens.
Stat. 71. May 10—June 7. Makassar. 27—32 m. 3 specimens.
Stat. 75. June 8. Lat. 4° 57′.4 S., long. 119° 2′.8 E. 18 m. HENSEN vertical net, with electric light in net, from 11 m. to surface. 1 specimen.
Stat. 96. June 27. South-east side of Pearl-bank, Sulu-Archipelago. 15 m. Plankton, surface. 1 specimen.
Stat. 99. June 28/29/30. Lat. 6° 7′.5 N., long. 120° 26′ E. Anchorage off North Ubian. 16—23 m. Plankton, surface, evening. About 50 specimens.
Stat. 106. July 4. Anchorage off Kapul-island, Sulu-Archipelago. 13 m. Plankton. 5 specimens.
Stat. 109. July 5/6. Anchorage off Pulu Tongkil, Sulu-Archipelago. 13 m. Plankton. Large number of specimens.
Stat. 125. July 18/19. Anchorage off Sawan, Siau-island. 27 m. Plankton. 32 specimens.
Stat. 129. July 22/23. Anchorage off Kawio- and Kamboling-islands, Karkaralong-group. 23—31 m. Plankton. 3 specimens.
Stat. 132. July 25. Lat. 5° 56′.7 N., long. 126° 25′ E. 3302 m. Plankton, surface. 1 specimen.
Stat. 140. August 4/5. Bay of Batjan. 13 m. Plankton, surface. 9 specimens.
Stat. 142. August 5/7. Anchorage off Laiwui, coast of Obi major. 23 m. Plankton. 4 specimens.
Stat. 165. August 20/22. Anchorage on North-east side of Daram-island (False Pisangs), East-coast of Misool. 49 m. Plankton, surface. 1 specimen.
Stat. 172. August 26/28. Gisser, anchorage between this island and Ceram-Laut. 18 m. Plankton. 17 specimens.
Stat. 250. December 6/7. Anchorage off Kilsuin, West-coast of Kur-island. 20—45 m. Plankton. 12 specimens.
Stat. 252. December 8/9. West side of Taam-island. 9—36 m. Plankton, surface. 5 specimens.
Stat. 282. January 15/17. Anchorage between Nusa Besi and the N.E.-point of Timor. 27—54 m. Plankton, surface. About 40 specimens.

Description. — Moderately slender. Frontal plate in both sexes somewhat produced (fig. 2*a*), narrowly triangular, with the tip nearly or completely acute. Upper side of the carapace without any protuberance. Eyes of very moderate size, generally reddish, sometimes dark or nearly black with somewhat or very feebly reddish tint. Antennular peduncles in the male moderately thick. Antennal squama a little narrower in the male (fig. 2*b*) than in the female (fig. 2*c*), from a little less to a little more than three times as long as broad, with its distal lobe somewhat varying in shape, but always unusually long, from at least two-thirds as long as broad to a little longer than broad. Gnathopods (fig. 2*e*) and thoracic legs moderately robust; first pair of thoracic legs slightly shorter than third; sixth joint of the legs divided by a distinct articulation. Male pleopods and pseudobranchial rami (fig. 2*g*) as described in the definition of the group.

Uropods a little more slender in the male (fig. 2*k*) than in the female (fig. 2*h*); exopod as long as, or a little longer than, the endopod, with from 3 to 9, but generally with 5 to 7, spines occupying less than one-third of the margin of the proximal joint, while the distal joint is from slightly more than half as long again to nearly twice as long as broad. The telson (fig. 2*h*) reaches somewhat behind the articulation of the exopod, it is slightly narrower and a little longer in the male than in the female, between two and a half and three times as long as broad; the widened basal part has two pairs of spines; the small spines occupy more than half of the lateral margins, and along nearly the distal third of the margins these spines are regularly arranged and increase quite regularly (fig. 2*i*) in length to the end; the terminal pair of long spines are about twice as long as the most distal lateral spines and frequently more than twice as long as the three spines between them.

Length 6.5 to 7.7 mm.; the males generally a little longer than the females.

Remarks. — According to the stations this species is very common near the shores in a large part of the area explored by the "Siboga". It is easily distinguished from all other species by the shape of the antennal squama taken together with the regular spinulation of the distal third of the telson; in the latter feature it is more related to *S. nodosa* m. and *S. affinis* m. than to any other form.

Considering the variation mentioned in the colour of the eyes and the number of spines on the exopod of the uropods, one might suppose that *S. vulgaris* comprises two or three species, and judging from the fact that *S. media* n. sp. can scarcely be separated from *S. inornata* n. sp. or *S. conformalis* n. sp. from *S. distinguenda* n. sp. without the aid of the secondary development of spines on the fourth pair of male pleopods, it may in reality be possible that *S. vulgaris*, in which the male pleopods afford no such excellent characters, comprises more than one species. But I have been unable to divide the species, and doubt whether it can be done with any certainty at all.

A female from Stat. 36 and four females from Stat. 66 have an Epicarid in the marsupium.

17. *Siriella affinis* n. sp. Pl. III, figs. 3*a*—3*i*.

Stat. 66. May 7/8. Bank between islands of Bahuluwang and Tambolungan, south of Saleyer. 8—10 m. Plankton. 12 specimens.

Stat. 106. July 5/6. Anchorage off Pulu Tongkil, Sulu Archipelago. 13 m. Plankton. 14 specimens.

Description. — Closely allied to *S. vulgaris*. Carapace in the male slightly produced in front (fig. 3*a*), leaving the area between the insertion of the eyes uncovered, the front margin being feebly angularly bent, but the tip itself a little produced, acute; the female has a considerably produced, triangular, acute frontal plate, which is moderately narrow, a little longer than broad and a little longer than in *S. quadrispinosa*. Eyes large, conspicuously larger than in *S. vulgaris*, dark with a reddish tint or nearly black. Antennular peduncle in the male moderately thick. Antennal squama in the female (fig. 3*c*) somewhat less than three times, in the male (fig. 3*b*) three times, as long as broad; terminal lobe at least more than half as broad again as long, frequently twice as broad as long. Gnathopods (fig. 3*d*) and especially the thoracic legs (fig. 3*e*) rather robust. Male pleopods and pseudobranchial rami (fig. 3*f*) as in the preceding species.

Uropoda subsimilar in both sexes (figs. 3*g* and 3*i*), moderately slender; exopod slightly longer than the endopod, with generally 3 to 5, rarely 6—7, marginal spines; distal joint of the exopod slightly more than half as long as the proximal joint and not fully twice as long as broad. Telson (figs. 3*g* and 3*h*) subsimilar in both sexes, reaching conspicuously beyond the articulation of the exopod, and as to shape and spines essentially as in *S. vulgaris*, but the lateral spines, which as to distance are arranged regularly along half of the lateral margins, increase in length regularly only along a little less than one-fourth of the margins, and the most distal pair of these spines are frequently more than two-thirds as long as the long pair of terminal spines.

Length of the male 7—7.5 m., of the female 6—6.5 m.

Remarks. — The large difference between the sexes as to the frontal plate is very interesting. This feature and the short terminal lobe of the antennal squama afford the best characters, by which *S. affinis* is distinguished from *S. vulgaris*.

Group 2. End of telson with three small spines and a single pair of more lateral, long spines. Proximal joint of the endopod of the uropods with much more than half of its outer margin furnished with spines, and at least about twice as long as the distal joint, which is at most twice as long as broad. Proximal widened part of the telson with three pairs of marginal spines; spines along the distal third of the lateral margins of the telson closely set, but irregular as to length, as several long spines are found, and between each two of these some, or near the end only two or one, smaller or small spines are inserted. Both rami of fourth pair of male pleopods terminating in very modified setæ. Pseudobranchial rami of second to fourth pairs of male pleopods spirally twisted.

18. *Siriella inornata* n. sp. Pl. IV, figs. 2*a*—2*k*.

Stat. 37. March 30/31. Sailus ketjil, Paternoster-islands. 27 m. and less. Plankton, surface. 9 specimens, ♂ and ♀.

Stat. 40. April 2. Anchorage off Pulu Kawassang, Paternoster-islands. 12 m. Townet. 2 specimens, both ♀.

Stat. 41. April 3. Lat. 7° 25′ S., long. 117° 50′.5 E. 96 m. Plankton, surface. 9 specimens, ♂ and ♀.

Stat. 99. June 28/29/30. Lat. 6° 7′.5 N., long. 120° 26′ E. Anchorage off North-Ubian. 16—23 m. Townet. 4 specimens, all ♀.

Description. — Body moderately robust. Carapace in both sexes somewhat produced, the frontal plate (fig. 2*a*) being a broad, rather low triangle with the vertex a little or sometimes somewhat produced, acuminated and acute. Eyes very large, black. Antennular peduncles in the male fairly slender. Antennal squama in the female not fully three and a half times as long as broad, in the male (fig. 2*b*) a little more slender, between three and a half and four times as long as broad; terminal lobe in both sexes much broader than long. Gnathopods as in the following species somewhat robust, a little shorter than first pair of thoracic legs which are slender beyond the middle; second pair of thoracic legs slightly longer than the first.

Pseudobranchial rami on second to fourth pairs of male pleopods spirally twisted (figs. 2*c* and 2*d*). Both rami of the fourth pair of male pleopods (fig. 2*e*) distinctly longer than those of second pair (fig. 2*c*), subsimilar in length and both showing special development; the endopod (fig. 2*f*) with the three distal joints as usually rather slender, its last joint terminating in a feebly curved, very thick and extremely long, stiff, spiniform seta which is longer than the sum of the three distal joints, feebly feathered on less than its proximal half and with the end acute; finally a very thick, spiniform seta, which is less than half as long as the other and feebly feathered, originates from the inner margin of the joint a little before the end, while the two setæ inserted on the end of the penultimate joint are nearly normal. The exopod (fig. 2*g*) with the antepenultimate and the penultimate joints somewhat thick and considerably widened from the base to the end, while the last joint is rather slender and terminates in an extremely long, stiff seta, which is still a little thicker and longer than that on the endopod, scarcely curved, nearly naked, with the end blunt and showing a peculiar structure (fig. 2*h*); finally a thick, spiniform seta, which is less than half as long as the other and naked, originates from the inner margin of the joint a little before the end, while the two setæ on the end of the penultimate joint are nearly normal and feathered, and a third seta originating from the distal inner angle of this joint is strongly chitinised, quite naked, somewhat thick at the base and distally thin and curved.

Uropods rather slender; the exopod, which conspicuously overreaches the endopod, with 14 to 16 marginal spines, the most proximal three or four with larger intervals and frequently more so than on fig. 2*i*, and the distal joint scarcely twice as long as broad. Telson about three times as long as broad, scarcely or slightly reaching beyond the articulation of the exopod, distally somewhat slender and with at least the distal third of the lateral margins perceptibly concave (fig. 2*k*); along this distal part generally 3 or 4 shorter spines, gradually increasing in length backwards, are found between each two of the rather long spines, while the most distal lateral spine or the two most distal lateral spines are rather long, though much shorter than the terminal pair of long spines.

Length of the male 11—11.6 mm., of the female 11.3—12 mm.

Remarks. — The male of this species is easily distinguished from the same sex of the three other forms of this group by the length and shape of the distal setæ on fourth pair of pleopods, while the female is very difficult or sometimes perhaps impossible to separate with certainty from that of *S. media*, the best character probably being, that the eyes are a little larger in *S. inornata* than in *S. media*. Furthermore *S. inornata* is closely allied to

S. Paulsoni Kossmann, from the Red Sea, but as the latter species has been established on a single female, it is impossible, at least without a new examination of the type, to say anything on differences between it and *S. inornata* or *S. media*; I am apt to think that it may be impossible to recognize *S. Paulsoni* before both females and males have been taken together in the Red Sea and redescribed together with the type-specimen.

19. *Siriella media* n. sp. Pl. IV, figs. 3*a*—3*k*.

Stat. 16. March 15/16. Lat. 6° 59′ S., long. 6° 59′ N. Bay of Kankamaraän, S. coast of Kangeang. 22 m. Vertical net, with electric light. 21 specimens.
Stat. 37. March 30/31. Sailus ketjil, Paternoster-islands. 27 m. and less. Plankton, surface. 15 specimens.
Stat. 41. April 3. Lat. 7° 25′ S., long. 117° 50′ E. 96 m. Plankton, surface, 3 specimens.
Stat. 109. June 5/6. Anchorage off Pulu Tongkil, Sulu-Archipelago. 13 m. Plankton. Numerous specimens.
Stat. 125. July 18/19. Anchorage off Sawan, Siau-island. 27 m. Plankton. 1 specimen.
Stat. 132. July 25. Lat. 5° 56′.7 N., long. 126° 25′ E. 3302 m. Plankton, surface. 2 specimens.
Stat. 172. August 26/28. Gisser, anchorage between this island and Ceram-Laut. 18 m. Plankton. 1 specimen.

Description. — It is so closely allied and similar to *S. inornata* that I had confounded both species until long after I discovered the strong differences between their furniture with modified setæ on the fourth pair of male pleopods. The frontal plate has its acuminated part a little more produced than generally in *S. inornata*. The eyes are perceptibly smaller than in the latter species. The antennal squama in the female (fig. 3*b*) somewhat less than three and a half times, in the male (fig. 3*a*) not quite three and a half times, as long as broad, with the terminal lobe only a little more than half as long as broad.

Fourth pair of male pleopods with the rami subequal in length; the endopod, the distal part of which is shown from the outer side in fig. 3*f*, terminates in two strong, moderately long, acute and considerably curved, spiniform setæ, the outer with some short, fine hairs beyond the middle and a little shorter than the inner which is naked; the penultimate joint has at its distal inner angle a slender, naked, straight, spiniform seta about as long as the joint, and at

Siriella serrata n. sp.

Description of the Male. — Similar to *S. inornata*, but at once distinguished from that form and from every other species of the genus by having the outer margin of the antennal squama furnished with spines. The frontal plate about as long as *S. inornata*, with the end acute but not acuminated. Eyes a little smaller than in *S. inornata*, black. Antennular peduncles moderately robust, distinctly thicker than in *S. inornata*. Antennal squama not fully three and a half times as long as broad, with the terminal lobe a little more than half as broad again as long; the distal outer denticle well developed, and the outer margin along its distal two-thirds with 4 or 5 articulated, moderately long spines. Pseudobranchial rami of second to fourth pairs of male pleopods spirally twisted. Rami of fourth pair of male pleopods equal in length; the exopod terminates in a single very long and strong, blunt spine more than one-fourth as long as the ramus; endopod with the four distal joints of normal length, but very sharply marked off from each other, its last joint terminating in an extremely long and strong, blunt spine, nearly half as long as the ramus, and the three preceding joints each with a long and strong, blunt spine directed much downwards. Rami of third and fifth pairs of pleopods normal. Exopod of the uropods a little longer than the endopod, not quite as slender as in *S. inornata*; proximal joint of the exopod with 12 spines occupying more than two-thirds of the margin; distal joint somewhat less than twice as long as broad. Telson with the distal half of the margins slightly concave, reaching slightly beyond the articulation of the exopod, and as to shape and spinulation agreeing with that of *S. inornata*. — Length of the single adult male 10.5 m.

Locality. — Suez. The specimen described has been captured by Mr. H. Mortensen (March 21, 1898) and belongs to the Copenhagen Museum.

its outer angle a very strong, acute, considerably curved, spiniform seta which is shaped about as the outer seta or spine of the terminal joint but is a good deal longer, reaching a little beyond its end; the long seta is densely set with short, fine hairs about from the middle of its front side to some distance from the end. The exopod have 5 distal spiniform setæ, all naked, not differing very much in length and the two longest among them about as long as the outer terminal seta of the endopod, but differing much from each other in shape and thickness: the two terminal setæ are very strong and thick at the base, the outer curved two times, the inner considerably curved; the two setæ placed at the inner angle of the penultimate joint are somewhat slender and straight, while the seta at the outer angle of the same joint is a little stronger and somewhat curved.

The uropods (figs. 3*g* and 3*i*) scarcely as slender as in *S. inornata*; the exopod distinctly longer than the endopod, its proximal joint with 13 to 16 spines, of which frequently only the two most proximal are rather distant from each other, and the distal joint not quite twice as long as broad. Telson (figs. 3*g*, 3*h* and 3*k*) nearly as in *S. inornata*, but the distal half of its lateral margins is generally straight, more rarely slightly concave, so that the distal third of the telson is proportionately a little broader than in *S. inornata* (comp. fig. 3*k* with fig. 2*k*, the figures showing the distal part of the male telson in the two species); the lateral branches of the two long, feathered terminal setæ as in *S. inornata* extremely thin and far from easily visible.

Length 10—11.5 m.

Remarks. — As already mentioned, the male is easily distinguished from that of *S. inornata* by the number, shape and length of the modified distal setæ of fourth pair of pleopods; from *S. plumicauda* m. it can be separated by the structure of the terminal feathered setæ on the telson. As to the females of *S. media* and *S. inornata* I refer to the "remarks" on the latter species.

Group 3. — End of telson with three small spines and a single pair of more lateral, long spines. Proximal joint of the endopod of the uropods with more than half of its outer margin furnished with spines, less than twice as long as the distal joint, which is from slightly more than twice to about three times as long as broad. Proximal widened part of the telson with three pairs of marginal spines; spines along the distal third of the lateral margins essentially as in group 2. Fourth pair of male pleopods with the endopod a little or somewhat longer than the exopod and terminating in modified, spiniform setæ, while the exopod is normal and terminates in slender, feathered setæ. (In one species even the endopod of the third pair of male

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Siriella plumicauda n. sp.

Description of the Male. — Very closely allied to *S. media*, but easily distinguished by the aspect of the feathered setæ at the end of the telson and on the front side of the first pair of pleopods; in this form the lateral branches of these setæ are strong, instantly discernible with a feeble pocket lens, while in *S. media*, *S. inornata* and the other species they are so thin that they can scarcely be perceived without a considerably magnifying instrument. *S. plumicauda* otherwise agrees so closely with *S. media* that a few remarks may be sufficient. The modified spiniform setæ on the rami of fourth pair of pleopods essentially as in that form, but none of the terminal setæ of the exopod bent twice. Exopod of uropods with 16 marginal spines. Telson as to shape and spines nearly as in *S. inornata*, consequently distally narrower than in *S. media*, and the lateral spines differ on the whole less in length, the smaller spines being longer than usual. — Length of the single adult male 12 mm.

Locality. — China Sea; lat. 2°0′ S., long. 107°6′ E. 1 adult male. Captain ANDRÉA 1869. The Copenhagen Museum.

pleopods is modified in a somewhat similar way). Pseudobranchial rami of second to fourth pairs of male pleopods not spirally twisted but nearly straight.

20. *Siriella æquiremis* n. sp. Pl. III, figs. 4*a*—4*c*; Pl. IV, figs. 1*a*—1*l*.

Stat. 35. March 28. Lat. 8° 0′.3 S., long. 116° 59′ E. 1310 m. Plankton, surface. 11 specimens.
Stat. 66. May 7/8. Bank between islands of Bahuluwang and Tambolungan, south of Saleyer. 8—10 m. Plankton. 1 specimen.
Stat. 81. June 14. Pulu Sebangkatan, Borneo-bank. 34 m. Plankton. 5 specimens.
Stat. 96. June 27. South-east side of Pearl-bank; Sulu-Archipelago. 15 m. Plankton, surface. 9 specimens.
Stat. 99. June 28/29/30. Lat. 6° 7′.5 N., long. 120° 26′ E. Anchorage off North-Ubian. 16—23 m. Plankton, surface. 2 specimens.
Stat. 117[a]. July 12. Lat. 1° 15′ N., long. 123° 37′ E. Townet. 12 specimens.
Stat. 177[a]. September 1. Lat. 2° 30′ S., long. 129° 28′ E. Townet. 7 specimens.
Stat. 194. September 15. Lat. 1° 53′.5 S., long. 126° 39′ E. 1504 m. Plankton. 2 specimens.
Stat. 194—197. September 15. Lat. 1° 53′.5 S.—1° 45′.3 S., long. 126° 39′ E.—127° 8′.3 E. Plankton. 5 specimens.
Stat. 245. December 3. Lat. 4° 16′.5 S., long. 130° 15′.8 E. 4956 m. Plankton, surface. 7 specimens.

Description. — Body moderately robust. Carapace in both sexes rather feebly produced, the frontal plate being a moderately broad, low triangle, with the end acute or subacute. Eyes nearly as large as in *S. inornata*, black. Antennular peduncle in the male moderately slender. Antennal squama in the male (Pl. III, fig. 4*b*) a little more, in the female (fig. 4*c*) a little less, than three and a half times as long as broad; the terminal lobe in both sexes much broader than long. Gnathopods (Pl. IV, fig. 1*a*) proximally perceptibly, distally much thicker than first pair of thoracic legs (fig. 1*b*), the sixth joint of which is slender with a conspicuous transverse articulation; second and third pairs of thoracic legs slightly longer than the first pair.

Pseudobranchial rami on second to fourth pairs of male pleopods nearly straight and either short, reaching the end of the first third of the endopod (figs. 1*c*—1*e*), or of moderate length, reaching to the middle of the endopod (fig. 1*g*). Rami of second or third pair of male pleopods similar in length and terminating in the usual feathered setæ (fig. 1*c*). Fourth pair of male pleopods (figs. 1*e* and 1*g*) with the exopod normal and terminating in slender, feathered setæ, and the endopod somewhat elongated, conspicuously longer than the exopod; the terminal and the penultimate joints of this endopod each with two robust, firmly chitinised, naked, spiniform setæ, the terminal outer setæ from a little more than one-third to half as long again as the inner terminal seta, the inner somewhat curved seta of the penultimate joint reaching to the end of or a little overreaching the inner terminal somewhat curved seta, and the outer seta of the penultimate joint reaching to the end of or overreaching a little the outer terminal seta.

Uropods rather slender (figs. 1*i* and 1*l*), with the endopod reaching about or generally quite to the end of the exopod; the exopod slightly narrower in the male (fig. 1*l*) than in the female (fig. 1*i*), with 8—12, most frequently 9—10, spines occupying more than half of the outer margin of the proximal joint, because the proximal spines are proportionately distant from each other, while the distal joint is a little more than half as long as the proximal joint and slightly more than twice as long as broad. Telson (figs. 1*i* and 1*k*) nearly three times as long

as broad, reaching somewhat beyond the articulation of the exopod, with the distal half of the lateral margins straight; along this distal half the lateral spines are closely set, and a number of them are long, while between two long spines 1, 2 or 3 short spines are found, the arrangement being so that near the distal end 1 small spine, a little more proximally 2 and finally 3 small spines are inserted in the intervals between the long spines; it may, however, be added that frequently no small spine is found between the two (or three) most distal, large lateral spines. The animals have a lateral pair of black, round spots on each abdominal segment and besides black spots of various shape on the uropods and on the female marsupium.

Length of the male 10—10.2 m., of the female 9.1—11.2 mm.

Remarks. — This species differs from the other forms of this group and from the forms of the preceding group by having the endopod of the uropods reaching about or generally exactly to the end of the exopod and by the well developed, black dots mentioned, while in all other species of both groups such dots are nearly or totally wanting and the exopod of the uropods conspicuously overreaching the endopod. — The differences mentioned in the description as to the length of the pseudobranchial rami and the relative length of the modified setæ on the endopod of fourth pair of male pleopods are, in my opinion, not of specific value, especially as it is possible to find specimens, showing a development of the spines intermediate between those exhibited in figs. 1*f* and 1*h*.

Distribution. — The Copenhagen Museum possesses this species from four localities, viz.: Arabian Sea, lat. 9° N., long. 73° E., March 3, 1872, H. Koch, 1 specimen; Bay of Bengal, December 20, "Galathea" Expedition, 5 specimens; Indian Ocean, lat. 3° 9′ N., long. 84° 44′ E., "Galathea", 1 specimen; finally China Sea, lat. 19° 14′ N., long. 116° 6′ E., June 18, 1846, "Galathea", 1 specimen. These statements, together with some of the "Siboga" stations, show that this species is frequently met with far from the coast in the open sea.

21. *Siriella anomala* n. sp. Pl. V, figs. 1*a*—1*l*.

Stat. 37. March 30/31. Sailus ketjil, Paternoster-islands. 27 m. and less. Plankton, surface. Numerous specimens.
Stat. 40. April 2. Anchorage off Pulu Kawassang, Paternoster-islands. 12 m. Townet. 16 specimens.
Stat. 41. April 3. Lat. 7° 25′ S., long. 117° 50′.5 E. 96 m. From 10 m. to surface. 22 specimens.

Description. — Shape of the body, frontal plate, eyes and male antennular peduncles about as in *S. inornata*, excepting that the frontal plate is a little more produced, with the distal part of its lateral margins more concave, than in the specimen of the latter species shown in fig. 2*a* on Pl. IV. Antennal squama very different in the two sexes; in the female it is normal (fig. 1*b*), a little more than three and a half times as long as broad, with the terminal lobe much broader than long; in the male (fig. 1*a*) it is quite anomalous, elongated, more than five times as long as broad, with the marginal denticle about at the middle of the squama, as the outer margin between this denticle and the base is distinctly shorter than in the female, while the terminal lobe is extremely elongated, more than three times as long as broad at the base. Gnathopods (fig. 1*c*) and thoracic legs (fig. 1*d*) a little more slender than in *S. inornata*, otherwise nearly as in that species.

Pseudobranchial rami of second to fourth pairs of male pleopods nearly straight and reaching a little beyond the middle the exopod (figs. 1*e* and 1*f*). Third pair of pleopods (fig. 1*f*) with the endopod somewhat longer than the exopod; penultimate joint of this endopod (fig. 1*g*) very elongated, with the outer terminal seta shorter than the joint and plumose, the inner terminal seta rudimentary; last joint somewhat elongated, terminating in two modified setæ a little longer than the joint and directed obliquely outwards; these setæ are broad at the base and seem to be flattened. Fourth pair of pleopods with the endopod only a little longer than the exopod and with the distal setæ modified (fig. 1*h*); on the antepenultimate joint the outer distal seta is feathered but somewhat short, while the inner is still shorter, very thin and naked; on the penultimate joint the two terminal setæ are stiff, naked and nearly straight, and the outer is much stronger than the inner and twice as long, being about as long as the sum of the four distal joints; on the terminal joint the outer seta is still slightly longer and stronger than the outer seta on the preceding joint, and about one-third as long again as the inner seta of the terminal joint; exopod normal, with feathered terminal setæ.

Uropods (figs. 1*i* and 1*l*) more slender than in any preceding species; exopod conspicuously longer the endopod, with 10—13 spines occupying considerably more than the half of the outer margin of the proximal joint, as the proximal spines are proportionately distant from each other; its distal joint considerably more than half as long as the proximal, about two and two-thirds to — sometimes in the male — three times as long as broad. Telson (fig. 1*i*) slightly overreaching the articulation of the exopod, with the distal half a little more slender than in *S. æquiremis* and the margins of this part straight or sometimes in the male very feebly concave; the arrangement and length of the spines along the lateral margins and at the end (fig. 1*k*) quite as in *S. æquiremis*.

Length 10—11 mm.

Remarks. — The male of this species is easily distinguished from all other forms of the genus by the very curious antennal squama and the peculiar development of the distal part of the endopod of third pair of pleopods. The female is readily distinguished from *S. æquiremis* by the conspicuous difference in the length of the rami of the uropods, and from *S. inornata* and allied forms by the much longer and narrower second joint of the exopod of the uropods, but it remains very uncertain whether it can be separated with any certainty from the female of *S. distinguenda*, and it is not easy to separate from *S. conformalis*, as may be seen in the "remarks" on these species.

22. *Siriella distinguenda* n. sp. Pl. V, figs. 2*a*—2*e*.

Stat. 37. March 30/31. Sailus ketjil, Paternoster-islands. 27 m. and less. Plankton, surface. 1 specimen, ♂.

Stat. 41. April 3. Lat. 7° 25′ S., long. 117° 50′.5 E. 96 m. From 10 m. to surface. 2 male specimens.

Besides I am apt to think that the female specimens captured at the following station belong to this species.

Stat. 125. July 18/19. Anchorage off Sawan, Siau-island. Plankton. 4 specimens, all ♀.

Description. — Shape of the body, frontal plate, eyes, male antennular peduncle, gnathopods, thoracic legs and pseudobranchial rami quite as in *S. anomala*. Antennal squama in the male (fig. 2*a*) quite different from that in the male *S. anomala*, but almost as in the female of this species; it is not quite three and a half times as long as broad, with the terminal lobe more than half as long as broad. Third pair of male pleopods with both rami equal and terminating in plumose setæ. Fourth pair of male pleopods (fig. 2*b*) with the endopod conspicuously longer than the exopod and terminating in three modified setæ; terminal joint (fig. 2*c*) with the outer seta very strong, naked, longer than the sum of the four proximal joints but not fully twice as long as the inner, strong, naked, somewhat curved seta; penultimate joint a little elongated, with its outer terminal seta normal and plumose, while the inner seta is naked, less strong but considerably longer than the inner seta of the terminal joint. Uropods of the male almost as in *S. anomala*; the exopod conspicuously longer than the endopod, with 10—12 spines on the outer margin of the proximal joint (fig. 2*d*), while the distal joint is scarcely as slender as in *S. anomala*, two and a half times or slightly more as long as broad. Telson of the male (fig. 2*e*) nearly as in *S. anomala*, but the distal half a little broader with the margins straight.

Length of the male 10.5 mm.

Remarks. — The male of this species is easily distinguished from that of *S. anomala* by the normal shape of the antennal squama and by not having the terminal part of the endopod of third pair of pleopods modified; from the male of *S. conformalis* it is separated by a very different development of the two outer distal setæ on the endopod of fourth pair of pleopods. But as to the females the matter is different, as the only character between this sex of *S. inornata* and *S. distinguenda* seems to be, that the distal joint of the endopod is a little less slender in the latter than in the former species. As is seen in the lists of stations of both species, a single male of *S. distinguenda* was found among a large number of males and females from Stat. 37 of *S. anomala*, but I did not feel justified in separating any female from that station as belonging to *S. distinguenda*, while I am sure that the females taken together with two males of *S. distinguenda* and several males of *S. anomala* at Stat. 41, all belong to the latter species. But I think that the material, four females, from Stat. 125 belongs to *S. distinguenda*. As to the difference between the females of *S. distinguenda* and *S. conformalis* I refer to the "remarks" on the latter species.

23. *Siriella conformalis* n. sp. Pl. V, figs. 3*a*—3*b*.

Stat. 220. November 1/3. Anchorage off Pasir Pandjang, west coast of Binongka. 278 m. Plankton. 7 specimens, males and females.

Description. — Very closely allied to *S. anomala* and especially to *S. distinguenda*. The frontal plate is a broad, rather low triangle with the apex acute but scarcely or not acuminated, the oblique anterior margin at each side of the apex nearly straight, scarcely or not concave. Eyes as in the species mentioned. Antennal squama similar in both sexes, about as in the male of *S. distinguenda*. Pseudobranchial rami nearly as in *S. anomala*. Third pair of male pleopods

with both rami equal and terminating in feathered setæ. Fourth pair of male pleopods with the endopod conspicuously longer than the normal exopod and terminating in four modified setæ (fig. 3*a*); terminal joint with its two setæ only moderately strong, naked and distinctly curved, and the outer setæ a little more than half as long again as the inner, but conspicuously shorter than the sum of the three distal joints; penultimate joint considerably elongated and somewhat slender, with its outer terminal seta naked and twice as long as the inner seta of the terminal joint, while its inner naked seta is somewhat shorter, about as long as the outer seta of the terminal joint. Uropods in both sexes nearly as in the male *S. distinguenda*; the exopod conspicuously longer than the endopod, with 10—12 spines on the outer margin of the proximal joint (fig. 3*b*), while the distal joint is a little less narrow than in the two preceding species, being about two and one-third times as long as broad. The telson about as in *S. distinguenda*.

Length 10.5—12.4 mm.

Remarks. — The male of this species is very similar to *S. æquiremis* in the structure of the endopod of fourth pair of male pleopods, but it is larger and easily separated from *S. æquiremis* by the difference in the length of the rami of the uropods. The male is easily separated from *S. distinguenda* by the great differences in the modified setæ of fourth pair of pleopods, but the female is extremely similar to the females of *S. anomala* and *S. distinguenda*, the only differences being, that the frontal plate is scarcely or not acuminated and the distal joint of the uropods scarcely as slender as in these two species.

Group 4. — End of telson without small spines, but with three (four) pairs of very long spines. Proximal joint of the endopod of the uropods serrated nearly to the base, but with only a few spines placed with long intervals; it is less than twice as long as the distal joint which is nearly three times as long as broad. Proximal widened part of the telson with two pairs of marginal spines; spines along the distal half of the lateral margins of a peculiar irregular aspect and most of them small. Male unknown.

24. *Siriella dubia* n. sp. Pl. V, figs. 4*a*—4*e*.

Stat. 142. August 5/7. Anchorage off Laiwui, coast of Obi Major. 23 m. Plankton. 1 specimen, an adult female.

Description of the Female. — Body slender. Frontal plate somewhat produced, forming a rather low triangle with the anterior oblique margins straight and the end blunt (fig. 4*a*). Eyes large, black; the eye-stalks considerably longer in proportion to their breadth than in the preceding forms, the distal joint being about as long as broad towards the base. Antennal squama slightly more than three times as long as broad; the terminal lobe unusually long, a little longer than broad. Gnathopods (fig. 4*b*) and first pair of thoracic legs (fig. 4*c*) somewhat slender, the last pair slightly longer than, but scarcely as strong as, the gnathopods; the other thoracic legs wanting in the specimen.

Uropods (fig. 4*d*) slender; the exopod considerably longer than the endopod, its proximal joint serrated from near the base to the end, with a strong spine near the end, a second spine

beyond the middle, a third spine near the base, and on the right exopod a fourth spine between the two proximal spines. According to the shape of the insertions of these spines and of the serration along the margin no spines are wanting, though the assumption that the entire margin has been set with spines would explain the anomalous arrangement. The distal joint of the exopod is almost three times as long as broad. The telson is proportionately short (fig. 4*d*), only a little more than twice as long as broad and far from reaching the articulation of the exopod; the basal somewhat widened part with two pairs of moderately small spines, and the proximal half of the lateral margins has only these two pairs; the distal half (fig. 4*e*) of each lateral margin with 10 or 11 spines, the 3 proximal of which are moderately small, the 2 or 3 next very small, the next spine is a little larger, the following spine very small, and now the spines increase in length to the last lateral spine, which is moderately long; the end of telson is broader than in any preceding species, a little emarginate at the middle and laterally rounded, with 4 pairs of very long spines, and the outer pair of these spines placed half on the terminal, half on the lateral margin and somewhat shorter than the three other pairs; between the inner pair of terminal spines no small spines but only the usual pair of long setæ are found.

Length 6.6 mm.

Remarks. — This interesting species differs strongly from all other forms hitherto known by the curious serration and spinulation of the proximal joint of the exopod of the uropods and by the shape and terminal spinulation of the telson. Unfortunately no male specimen could be detected, and it may be possible that the male pleopods show features not found in the three other groups of Asiatic species.

Hemisiriella n. gen.

This new genus differs from *Siriella* in the following features. Carapace unusually short, leaving uncovered the two posterior thoracic segments both above and on the sides and besides the upper surface of the antepenultimate segment. Third joint of the antennular peduncle in the female (Pl. VI, fig. 1*b*) at least twice as long as broad and almost as long as the first. The antennal squama proportionately small, not quite reaching the end of the third joint of the endopod (Pl. VI, fig. 1*c*). On the left mandible (Pl. V, figs. 5*b*, 5*c* and 5*e*) the cutting edge is transverse without saw-teeth, the movable lacininia is large, conical, serrated behind, and the molar process is short, transversely cut, broader from above than from below; on the right mandible the cutting lobe is produced as a very large, triangular, acute plate with a single tooth above near the base (Pl. V, figs. 5*d* and 5*f*), a movable lacinia is wanting, and the molar process is produced, somewhat narrow, a little curved and blunt; setæ or spines are wanting on both mandibles. First pair of thoracic legs (Pl. VI, fig. 1*g*) extremely elongated, nearly twice as long as the second pair (Pl. VI, fig. 1*k*), with a distinct transverse articulation on sixth joint before the middle and the terminal brush of setæ exceedingly long, surrounding the apical and nearly rudimentary part of the leg (Pl. VI, fig. 1*h*); on the following pairs of thoracic legs an articulation across the sixth joint could not be perceived.

It may be added that the pseudobranchial rami on second to fourth pairs of pleopods

are spirally twisted as in most species of *Siriella*, while the endopods and exopods of third or fourth pairs are completely similar, without thickened setæ.

This sharply defined new genus comprises two new species, both captured by the "Siboga".

Key to the Species.

Endopod of uropods at most as long as, or conspicuously shorter than, the exopod . . . . . *H. pulchra* n. sp.
Endopod of uropods reaches conspicuously beyond the end of the exopod. *H. parva* n. sp.

25. *Hemisiriella pulchra* n. sp. Pl. V, figs. 5*a*—5*g*; Pl. VI, figs. 1*a*—1*p*.

Stat. 37. March 30/31. Sailus ketjil, Paternoster-islands. Plankton, surface. Large number of specimens.
Stat. 41. April 3. Lat. 7° 25′ S., long. 117° 50′.5 E. 96 m. Plankton, 10 m. to surface. Large number of specimens.
Stat. 43. April 4/5. Anchorage off Pulu Sarassa, Postillon-islands. Depth up to 36 m. HENSEN vertical net with electric light. 1 specimen.
Stat. 75. June 8. Lat. 4° 57′.4 S., long. 119° 2′.8 E. 18 m. HENSEN vertical net with electric light, from 11 m. to surface. 1 specimen.
Stat. 125. July 18/19. Anchorage off Sawan, Siau-island. Plankton. 1 specimen.
Stat. 148. August 10. Lat. 0° 17′.6 S., long. 129° 14′.5 E. 1855 m. HENSEN vertical net, from 1000 m. depth to surface. 3 large specimens.

Description. — Slender. Frontal plate somewhat produced (Pl. V, fig. 5*a*) forming a moderately low triangle with the apex acute and sometimes feebly acuminated. Eyes of very moderate size, red. Antennal squama (Pl. VI, fig. 1*c*) somewhat less than three times as long as broad; terminal lobe much broader than long. Uropods moderately broad, subsimilar in both sexes (Pl. VI, figs. 1*n* and 1*o*); endopod at most as long as, and generally conspicuously shorter than, the exopod; exopod with 5—8 spines occupying at most scarcely one-third of the outer margin of the proximal joint, its distal joint somewhat less than twice as long as broad. Telson (Pl. VI, fig. 1*n*) proportionately short, not reaching the articulation of the exopod, only a little more than twice as long as broad and similar in both sexes; the proximal part is very widened, with two pairs of marginal spines; from the proximal pair of these spines the telson narrows rather quickly, and then the margins are parallel to slightly beyond the middle, where the spinulation begins, wherefrom they gradually converge more to the broadly rounded end; the lateral spines on this distal part (fig. 1*p*) are comparatively few in number, only about 8 or 9, the more proximal ones irregular as to size and intervals, while the distal four pairs increase rapidly in length posteriorly; the end has 3 small spines and a couple of long setæ at the middle, more laterally 2 pairs of long spines, the outer pair conspicuously longer than the inner.

Length of a large male 9.3 mm., of a large female 9 mm.

H. pulchra var. vel n. sp.?

Stat. 142. August 5/7. Anchorage off Laiwui, coast of Obi Major. 23 m. HENSEN vertical net with electric light. 1 specimen.

Stat. 260. December 16 and 18. 2,3 miles N. 63° W. from the north point of Nuhu Jaan, Kei-island. 1 specimen.

The two specimens from these stations are adult females, but unfortunately not well preserved. They differ from the typical specimens of *H. pulchra* in the following particulars. The body is more robust; the eyes are conspicuously darker; the telson is shaped quite as in the female of the following species, not constricted at some distance from the base, but tapering slowly and regularly from near the base to the broad end, with 3 or 4 spines on the basal part and with 3 pairs of long terminal spines as in *H. parva*. In other characters these specimens agree with the typical *H. pulchra*, and judging from the variation in the shape and armature of the telson in the following species I suppose that the differences mentioned are not of specific value.

26. *Hemisiriella parva* n. sp. Pl. VI, figs. 2*a*—2*e*.

Stat. 96. June 27. South-east side of Pearl-bank. Sulu-Archipelago. 15 m. Plankton. 1 specimen (adult ♀).

Stat. 132. July 25. Lat. 5° 56′.7 N., long. 126° 25′ E. 3302 m. Plankton, surface. 1 specimen.

Stat. 148. August 10. Lat. 0° 17′.6 S., long. 129° 14′.5 E. 1855 m. HENSEN vertical net, from 1000 m. depth to surface. 1 specimen.

Stat. 203. September 19. Lat. 3° 32′.5 S., long. 124° 15′.5 E. $\dot{4}\overline{892}$ m. HENSEN vertical net, from 1500 m. depth to surface. 2 specimens (♂ and ♀, both adult).

Description. — Slender. Frontal plate rather feebly produced, with the tip rounded. Eyes smaller than in *H. pulchra*, red. Antennal squama in the female (fig. 2*b*) scarcely two and a half times as long as broad, in the male (fig. 2*a*) slightly longer and narrower; terminal lobe much broader than long. Uropods (fig. 2*c*) more narrow than in *H. pulchra*, subsimilar in both sexes; the exopod conspicuously shorter than the endopod, with 3—6 marginal spines, and its distal joint somewhat more than twice as long as broad. The telson reaches the articulation of the exopod and its scarcely two and a half times as long as broad. In the two adult females it (figs. 2*c* and 2*d*) tapers gradually but slowly from near the base to the rather broad end; the proximal part has 2 or 3 small spines on each margin, the distal part 6—8 pairs of irregularly arranged spines, all short excepting the last pair which is somewhat longer; the end has 3 small spines and 3 pairs of long spines, the second pair considerably longer than the inner pair. In the single male from the "Siboga" the telson (fig. 2*e*) is intermediate as to shape and spinulation between that in the female and the telson in the typical *H. pulchra*: it is somewhat constricted before the middle, the basal part being widened with two pairs of spines, the distal pair of which are thick; the distal half of the telson tapers more than in the female, so that its end is considerably more narrow; the lateral spines of this part are much longer and thicker than in the female, and the distal four pairs increase posteriorly gradually and strongly in length; the end has only 2 pairs of long spines, the inner of which are not longer than the last lateral pair, while the outer pair are twice as long; of intermediate small spines only 2 are present, and they are extremely small. (The two usual, long, terminal setæ are wanting, but they may be lost in my specimens).

Length of the adult male 6.5 mm.; an adult female measures 6.2 mm., the other adult female only 5.3 mm.

Remarks. — This small species is easily distinguished from *H. pulchra* by the uropods. The Copenhagen Museum possesses 6 specimens taken in the Bay of Bengal: lat. 6° 22′ N., long. 95° 54′ E.; 5 of these specimens are females, the sixth specimen is a very small male, 4.9 mm. long, in which the telson is nearly as in the female, but perhaps it is not quite full-grown.

Subfamily III. Rhopalophthalminæ n.

The characters of the subfamily are given in the synopsis on p. 11—12. Only one genus is known.

Rhopalophthalmus Illig.

Description. — General aspect about as in *Siriella*. Carapace very short. Eye-stalks somewhat long or very long. Antennular peduncles in the female moderately slender, in the male somewhat thicker, especially their the distal part; first joint nearly as long as the sum of the two distal joints, and the major part of its outer lateral margin furnished with plumose setæ directed upwards and inwards in a most aberrant way (Pl. VI, fig. 3*a*); third joint in the male with the lobe bearing the sensory setæ not distinguishable; outer flagellum in the male thickened and much expanded towards the base. Antennal squama moderately long, somewhat narrow, with the outer margin naked and terminating in a tooth. Labrum transverse, without process in front. Mandibles with the movable lacinia thick; the left mandible (fig. 3*c*) without setæ, the right (fig. 3*d*) with a single, thick seta behind that lacinia; molar process of the left mandible thick, much produced, with teeth on the end, that of the right mandible thick, slightly produced, with a few, blunt tubercles on the terminal surface; the palp moderately short, very feebly expanded (fig. 3*b*). Maxillæ (fig. 3*e*) with the lobe from third joint deeply cleft, the palp rather small, the exopod small. Maxillipeds (fig. 3*f*) with second joint large and produced into a conspicuous lobe; the other joints slender; a claw not distinguishable. Gnathopods (fig. 3*g*) as in *Siriella*, without lobes from any joint. Thoracic legs (fig. 3*h*) subsimilar, slender; sixth joint subdivided by some articulations; seventh joint and claw rudimentary or wanting. Pleopods in the female unusually long; those of fifth segment only a little shorter than the segment itself. Pleopods in the male well developed; first pair (fig. 3*i*) with the exopod multiarticulated, the endopod much shorter, with the protuberance minute; second pair (fig. 3*k*) with the exopod very elongated; the other pairs with both rami subequal; a kind of lamellar pseudobranchiæ are found in the four posterior pairs, and these lamellæ are — at least in the species known to me — trilobate on second to fourth pairs with the lobes very unequal in size. Uropods (Pl. VII, fig. 1*c*) very slender, each ramus divided by a well developed articulation beyond the middle, exopod with the outer margin very finely serrate and — according to Illig — setose; otocyst well developed. Telson linguiform, distally without incision.

Remarks. — This genus was established by Illig in a preliminary note on the "Valdivia" Mysidacea (Zool. Anz. B. XXX, 1906, p. 207). Illig does not mention the articulation

of the rami of the uropods, but in the shape of the antennal squama and the interesting telson and in the development of the second pair of pleopods his species, *R. flagellipes* Illig, is so closely related to the form captured by the "Siboga" that I am convinced that the same interesting structure of the uropods is found in his species.

27. *Rhopalophthalmus egregius* n. sp. Pl. VI, figs. 3*a*—3*k*; Pl. VII, figs. 1*a*—1*d*.

Stat. 323. February 24/25. Sangkapoera-roads, Bawean-island. 12 m. 12 specimens (comprising adults of both sexes, but all badly preserved).

Description. — Body scarcely as robust as in *Siriella anomala*. Carapace very short, perhaps as short as, or still shorter than, in *Hemisiriella*, but the bad state of preservation does not allow a more exact judgment as to the length of the thorax. The frontal plate (Pl. VI, fig. 3*a*) is very short, forming a very flat triangle with the vertex blunt; at each lateral end of the plate a short, broad, acute, supraorbital tooth is found, the outer margin of which is much longer than the inner, the upper part of the front lateral margin receding a little behind the lateral end of the margin limiting the frontal plate. Eyes somewhat large, black; eye-stalks a little longer than broad at the base of the cornea, without tubercle. Antennal squama (Pl. VI, fig. 3*a* and Pl. VII, fig. 1*b*) similar in both sexes, nearly six times as long as broad, with the margins parallel; the outer margin terminates in a slender denticle scarcely or slightly overreaching the end of the short lobe; the lobe is marked off by a somewhat oblique, very distinct articulation.

Endopod of first pair of male pleopods (Pl. VI, fig. 3*i*) very oblong, about three times as long as broad; exopod of second male pleopods (fig. 3*k*) more than twice as long as the endopod, with the joints of more than its distal half elongated, increasing in length to the tip and without setæ, excepting the last joint, which has two long terminal setæ and a third long lateral seta near the end.

Uropods (Pl. VII, fig. 1*c*) similar in both sexes, very slender; the exopod somewhat longer than the endopod, with its distal joint more than three times as long as broad; the inner margin of the exopod with the usual feathered setæ, while the outer margin, though finely serrated, is naked in my specimens, but perhaps the setæ (according to ILLIG's figure well developed in his species) are lost; the endopod has short hairs along the outer, long and feathered setæ along the inner, margin and besides a single, strong spine near the middle of the inner margin of its proximal joint, while its distal joint is a little shorter than that of the exopod.

Telson (Pl. VII, figs. 1*c* and 1*d*) not fully three times as long as broad; a short basal part is considerably widened but without marginal spines; then the telson is constricted but increases again feebly in breadth to the middle, wherefrom it tapers to the rather broad and broadly rounded end; somewhat more than half of each lateral margin is armed with about 15 strong spines increasing gradually and considerably in length posteriorly and each bearing at the base of the inner margin 2 or 3 fine denticles. The end of telson (fig. 1*d*) has four very long and extremely robust spines, the outer pair a little longer than the inner; each spine has along each lateral margin a close row of spiniform processes, small near the base and

increasing in length and thickness to or beyond the middle, where they are very strong; the terminal portion of the spines without any lateral armature.

Length of both sexes 10 mm.

Remarks. — This species, which shows much resemblance to *Siriella*, is one of the most interesting forms of Mysidacea secured by the "Siboga". It may be convenient to remark that the state of preservation did not allow a more detailed description of the distal part of the thoracic legs. — The species is easily distinguished from *R. flagellipes* Illig (from the estuary of the Congo) by much shorter eye-stalks.

Subfamily IV. Gastrosaccinæ Norm.

The characters of the subfamily is given in the synopsis on p. 11—12. The subfamily was established in 1892 by NORMAN for the genera *Gastrosaccus* Norm. and *Anchialus* Kröyer; he saw that these two genera, though differing much as to general aspect, are in reality related to each other. In 1906 the same author substituted the name *Anchialina* for *Anchialus*, which was preoccupied for a genus of Coleoptera. KOSSMANN in 1880 established the genus *Haplostylis*, which in my opinion cannot be maintained as well separated from *Gastrosaccus*; the same is the case with *Pontomysis* Czern. established in 1882. *Chlamydopleon* Ortm., established in 1893, is also to be cancelled, being founded on a species closely allied to *Gastrosaccus spinifer* Goës. *Archæomysis* Czern., established in 1882, is to be maintained, because the pleopods of the female, though very small, are all biramous; the genus is nearly related to *Gastrosaccus*. The genus *Callomysis*, established by HOLMES in 1895, is probably identical with *Archæomysis*, having the "pleopods in the female rudimentary but biramous"; HOLMES described and figured the exopod of the uropods as setose along the outer margin, but I suppose it to be an error, as that margin probably is furnished with a row of feebly curved spines as in *Gastrosaccus* and *Archæomysis*. In the following I establish two new genera, *Paranchialina* and *Pseudanchialina*, on two species described by G. O. SARS in his "Challenger" work and by him referred to *Anchialus*; the genera *Anchialina*, *Gastrosaccus* and *Pseudanchialina* are represented in the "Siboga" collection. — Probably no other genus established in the literature belongs to the present subfamily.

Anchialina Norman.

(*Anchialus* Kr., preoccupied).

Description. — Body stout. Carapace long, covering the thorax at most with the exception of the posterior half of its last segment; posterior margin straight or feebly emarginate; frontal plate somewhat or very much produced. Eyes well developed; eye-stalks somewhat short. Antennular peduncle much thicker in the male than in the female; the male lobe short, tuberculiform; outer flagellum in the male much expanded at the base. Antennal squama small, short; its outer margin naked and terminating in a denticle; second joint of the endopod very much longer and thicker in the male than in the female (Pl. VII, figs. 3*c*—3*d*). Mandibles with

the movable lacinia, the setæ and the molar tubercle well developed; the palp with the second joint somewhat expanded, third joint very oblong. Maxillæ with all parts of normal size and shape. Maxillipeds somewhat robust, without any lobe; claw very long. Gnathopods with second joint very large and the claw long; fifth joint in the female simple, in the male expanded and produced on the inner side. Thoracic legs with second joint very large, sixth joint divided by 2 or 3 vertical articulations, seventh joint rudimentary and a claw not discoverable; basal part of the exopod very broad; in the male sixth joint of first pair is specially modified in some species.

First abdominal segment in the female with a lateral pair of protruding lamellæ. In the female the pleopods of first pair are normal, styliform, while the other pairs are remarkably transformed, being very short, broad, movable plates. Pleopods in the male well developed; exopod of first pair and both rami of the other pairs multiarticulate, and exopod of third pair elongated, distally less or more modified; endopod of all pairs with a free basal lamella, but on the first pair only the lamella, not the endopod itself, is found. Uropods with the exopod even shorter than the endopod; outer margin of the exopod with a good number of spines, the first spine somewhat removed from the base, and the last close at the end or on the end; at least the distal half of the endopod with several long spines; otocyst small. Telson long, posteriorly cleft. Female marsupium formed by two pairs of lamellæ.

Remarks. — The genus *Anchialus* was established in 1861 by KRÖYER on *A. typicus* Kr., a species from the tropical Atlantic; in 1906 NORMAN substituted the name *Anchialina* for *Anchialus*. In 1877 G. O. SARS gave a most elaborate description with numerous figures of a second species, *A. agilis* G. O. S., from the Mediterranean. In 1885 SARS redescribed in the "Challenger" Report what he believed to be *A. typicus* Kr.; it will be shown presently that his specimens, taken off the Cape, in reality belong to another species; in his preliminary paper on the "Challenger" Schizopoda (1883) SARS had established a new species, *A. truncatus* G. O. S., on the same specimens, and the latter name must therefore be restored. In the same work he described *A. angustus* from South Australia and *A. pusillus* from the Celebes Sea. But *A. pusillus* G. O. S. does not belong to *Anchialus*; in the sequel I redescribe this species and establish a new genus, *Pseudanchialina*, for its reception. And for *A. angustus* I propose a second new genus, *Paranchialina*, as it differs from the other forms of *Anchialina* in the following essential features: the body is slender; the carapace is only moderately long, leaving uncovered the last thoracic segment and a part of the preceding segment; second joint of the maxillipeds possesses a conspicuous lobe; gnathopods and first pair of thoracic legs do not present sexual differences; in the female the three anterior pairs of pleopods are normal, styliform, the two posterior pairs are transverse lamellæ; the basal lobe from the endopods of the pleopods in the male is normal, oblong, not developed as a kind of pseudobranchial lamella; the exopod of the uropods with only a couple of spines near the middle of its outer margin, and the proximal half of this margin is naked, the distal half setiferous. All these characters are, taken together, of generic value, while in other features *Paranchialina* is allied to *Anchialina*.

The "Siboga" collection contains a rich material of 2 species, *A. typica* Kr., and *A. grossa* n. sp.; in the restriction proposed the genus now comprises 4 species, viz. *A. typica* Kr., *A. agilis* G. O. S., *A. truncata* G. O. S. and *A. grossa* n. sp.

28. *Anchialina typica* Kröyer. Pl. VII, figs. 2*a*—2*k*.

1861. *Anchialus typicus* Kröyer, Naturh. Tidsskr. 3 Række B. I, p. 53, Tab. II, fig. 7, *a*—*l*.

Stat. 16. March 15/16. Lat. 6° 59′ S., long. 115° 24′.7 E. Bay of Kankamaraän, S. coast of Kangeang. 22 m. HENSEN vertical net with electric light. 9 specimens.
Stat. 35. March 28. Lat. 8° 0′.3 S., long. 116° 59′ E. 1310 m. Plankton, surface. 6 specimens.
Stat. 37. March 30/31. Sailus ketjil, Paternoster-islands. 27 m. and less. Plankton, surface. 1 specimen.
Stat. 40. April 2. Anchorage off Pulu Kawassang, Paternoster-islands. 12 m. 30 specimens.
Stat. 99. June 28/29/30. Lat. 6° 7′.5 N., long. 120° 26′ E. Anchorage off North-Ubian. 16—23 m. Plankton, surface. 4 specimens.
Stat. 106. July 4. Anchorage off Kapul-island, Sulu-Archipelago. 13 m. Plankton. 3 specimens.
Stat. 109. July 5/6. Anchorage off Pulu Tongkil, Sulu-Archipelago. 13 m. Plankton. 3 specimens.
Stat. 142. August 5/7. Anchorage off Laiwui, coast of Obi Major. 23 m. HENSEN vertical net with electric light. 5 specimens.
Stat. 315. February 17/18. Anchorage East of Sailus Besar, Paternoster-islands. Plankton. 2 specimens.

Description. — It is so closely allied to the species represented by G. O. SARS as *A. typica*, but two years before described by him as *A. truncata*, that it may be useful to refer to his figures for comparison. Carapace as in *A. truncata* excepting the frontal plate; this plate (fig. 2*a*) is shorter than in *A. truncata*, with the anterior margin distinctly emarginate which is due to the fact, that the posterior part of the plate is somewhat concave and curved a little downwards, while a short anterior part is bent downwards so strongly, that it is invisible from above, the visible anterior margin being formed by the limit between this short, deflexed part and the remainder of the concave plate. Eyes of very moderate size, dark brownish and as broad as the end of the stalk, which is subcylindrical and about as broad as, or a little broader than, the length of its anterior margin. Antennulæ and antennal squama as in *A. truncata*.

Gnathopods in the male (fig. 2*b*) nearly as in *A. truncata*; second joint extremely large, broader than long, with the front margin very long; fifth joint gradually somewhat expanded on the inner side from the base to a little before the end, so that a nearly rectangular corner protrudes a little behind the insertion of the sixth joint, and the margin between the insertion and the corner is somewhat concave; sixth joint not widened. Gnathopods in the female (fig. 2*f*) simple. First pair of thoracic legs in the male (fig. 2*c*) with the distal part of the endopod very different from that in the other species: sixth joint somewhat widened, undivided, distally a little obliquely truncated (figs. 2*c* and 2*d*) with 6 terminal, very long, thick and curiously built setæ, 2 of which are in the main covered by the 4 others; seventh joint (fig. 2*d*, 7) small, but yet larger than that of the following legs, oblong, and when seen from below covered by the setæ mentioned. In the female (fig. 2*g*) the sixth joint is normal, much more slender, without aberrant setæ and divided into 3 subjoints. Fig. 2*e* shows the terminal part of second pair of legs (in the male); sixth joint is divided by 2 articulations, and seventh joint is very small.

Lateral wings of first abdominal segment in the female nearly narrowly rectangular, about two and a half times as long as broad, with the outer margin nearly straight and the angles rounded. The plate-shaped four posterior pairs of female pleopods nearly two and a half times as broad as long. Pleopods in the male with the pseudobranchial lamellæ somewhat

triangular (fig. 2 *h*), but the outer angle is distinctly, the inner very broadly, rounded. Exopod of third pair (fig. 2 *h*) not fully twice as long as the endopod; counting its joints from the distal end the two first joints are short, simple, but the 3 distal setæ of the terminal joint and the outer setæ of the other joint are proportionately short; the six following joints — counted from the distal end — each at the outer side with a protuberance increasing in size and especially in breadth from the most proximal to the most distal of these joints (fig. 2 *i*); counting again from the distal end of the ramus fifth, sixth, seventh and eighth — in small specimens only fifth, sixth and sometimes seventh — joints each on the outer side with a slender process directed outwards and somewhat forwards and terminating in a fine, naked seta.

Uropods (fig. 2 *k*) with the endopod somewhat broad and at least reaching the end of telson; exopod considerably shorter than the endopod, with the end angular and the outer margin furnished from the end to rather near the base with a large number of spines, nearly all short, only the three or four most distal increasing gradually somewhat in length. Telson about two and a half times as long as broad (fig. 2 *k*), tapering gradually and very moderately in breadth from the base to near the end; the lateral margins along about two-thirds of their length with numerous spines somewhat unequal in length, and several among them moderately long; the terminal incision so narrow at the bottom that the spines from the opposite sides nearly reach each other; the terminal pair of spines long.

Length of the male 6 mm., of the female 4.5 mm.; the Kröyerian male type preserved in the Copenhagen Museum measures 7.0 mm. in length.

Remarks. — *A. truncata* G. O. Sars = *A. typica* G. O. Sars (not Kröyer) differs from the real *A. typica* Kr. in a number of features. The frontal plate is a little longer with the transverse, straight terminal margin; the eye-stalks seem to be shorter; the protruding part of the fifth joint of the male gnathopods is more removed from the distal end of the joint; the sixth joint of the first pair of the thoracic legs in the male is quite different, being divided into 3 subjoints with about 11 long, cylindrical setæ distributed along the distal two-fifths of the interior margin of the joint and on its end; the pseudobranchial plate of the male pleopods has the outer angle sharp and setose; finally the exopod of third pleopods (not fourth pair, as stated by Sars) is extremely different, resembling much more a normal ramus.

Distribution. — Kröyer's two specimens of *A. typica* were taken in the tropical Atlantic, lat. 14° N. The Copenhagen Museum possesses a good number of specimens of this species taken in Cruz Bay, St. Jan, Danish West-Indies, together with a large number of other Plankton-Crustacea by Mag. sc. C. Löfting (Jan. 10, 1896). Furthermore it was taken by Dr. Th. Mortensen North of St. Thomas, West-Indies (1 specimen) and at two localities in the Gulf of Siam, viz. near Koh-si-Chang, 10—15 fathoms (1 specimen) and in the Bay of Rayong, 7—10 fathoms (1 specimen). — Statements in the literature on the capture of *A. typica* ought to be regarded with doubt until the specimens mentioned have been re-examined; it may, however, be added that the specimens mentioned by Ortmann in his paper "Schizopods of the Hawaiian Islands" (Bull. U. S. Comm. Fish and Fisheries for 1903, p. 972—973), according to his remarks on first pair of legs in the male, certainly belong to *A. typica* Kr.

29. *Anchialina grossa* n. sp. Pl. VII, figs. 3*a*—3*n*; Pl. VIII, figs. 1*a*—1*d*.

Stat. 16. March 15/16. Lat. 6° 59′ S. long. 115° 24′.7 E. Bay of Kankamaraän, S. coast of Kangeang. 22 m. HENSEN vertical net, with electric light. Many specimens.
Stat. 37. March 30/31. Sailus ketjil, Paternoster-islands. 27 m. and less. Plankton, surface. Many specimens.
Stat. 41. April 3. Lat. 7° 25′ S., long. 117° 50′.5 E. 96 m. Plankton, 10 m. to surface. Many specimens.
Stat. 43. April 4/5. Anchorage off Pulu Sarassa, Postillon-islands. Depth up to 36 m. HENSEN vertical net, with electric light. 1 specimen.
Stat. 66. May 7/8. Bank between islands of Bahuluwang and Tambolungan, south of Saleyer. 8—10 m. Plankton. 4 specimens.
Stat. 75. June 8. Lat. 4° 57′.4 S., long. 119° 2′.8 E. 18 m. HENSEN vertical net, with electric light, from 11 m. to surface. 2 specimens.
Stat. 93. June 27. Pulu Sanguisiapo, Tawi-Tawi-islands, Sulu-Archipelago. 12 m. Surface. 1 specimen.
Stat. 99. June 28/29/30. Lat. 6° 7′.5 N., long. 120° 26′ E. Anchorage off North-Ubian. 16—23 m. Plankton, surface. 23 specimens.
Stat. 106. July 4. Anchorage off Kapul-island, Sulu-Archipelago. 13 m. Plankton. 1 specimen.
Stat. 109. July 5/6. Anchorage off Pulu Tongkil, Sulu-Archipelago. 13 m. Plankton. 4 specimens.
Stat. 125. July 18/19. Anchorage off Sawan, Siau-island. 27 m. Plankton. 1 specimen.
Stat. 142. August 5/7. Anchorage off Laiwui, coast of Obi Major. 23 m. HENSEN vertical net, with electric light. 1 specimen.
Stat. 165. August 20/22. Anchorage on North-east side of Daram-island (False Pisangs), East coast of Misool. 49 m. 1 specimen.
Stat. 315. February 17/18. Anchorage East of Sailus Besar, Paternoster-islands. Depth up to 36 m. Plankton. 1 specimen.

Description. — Body clumsy. Carapace large, covering the trunk excepting the posterior dorsal half of the last segment; its posterior margin feebly emarginate. Frontal plate in the female (Pl. VII, fig. 3*b*) large and anteriorly produced into a considerable, triangular, acuminated rostral part; the plate in the male (fig. 3*a*) is proportionately smaller, but the produced rostral part is more acuminated with the lateral margins more concave, forming a narrow process bent much downwards. Eyes conspicuously larger than in *A. typica* and slightly broader than the end of the stalk, brown or dark-brown; eye-stalks increasing in breadth towards the eye. Antennular peduncles longer and very much thicker in the male (fig. 3*a*) than in the female (fig. 3*b*). Antennal squama small in both sexes, about two and a half times as long as broad; second (apparently first) joint of the endopod in the female (fig. 3*d*) shorter than the breadth of the squama, in the male (fig. 3*e*) extremely large, thick and only a little shorter than the length of the squama.

Gnathopods in the female (figs. 3*h* and 3*i*) simple; in the male very different (figs. 3*e* and 3*f*): second joint proportionately much larger, fifth joint considerably widened and besides on the inner side with a very large, oblong-triangular, distally blunt, lamellar process directed inwards and much forwards; sixth joint broad. First pair of thoracic legs (fig. 3*g*) similar in both sexes and shaped nearly as the following pairs, with sixth joint divided by three articulations.

Lateral wings of the first abdominal segment in the female (fig. 3*k*) much larger than in *A. typica*, increasing in breadth from the front end and posteriorly produced in a somewhat

oblong, rounded, free lobe directed backwards and outwards; the wing covers the major part of the upper surface of the marsupium outside the abdomen. The plate-shaped four posterior pairs of female pleopods not quite twice as broad as long. Pseudobranchial lamellæ of the male pleopods very large, bilobed (Pl. VII, fig. 3*l*; Pl. VIII, fig. 1*a*), the outer lobe three or four times as large as the inner, and both without sharp angles. Exopod of third male pleopod (Pl. VIII, fig. 1*a*) about half as long again as the endopod; its terminal part exceedingly complicate with several spines (figs. 1*b* and 1*c*), some of which developed in a most aberrant way: the terminal spine or process is bifurcate near the base with one of the rami short, while the other is extremely long, somewhat curved and its most distal part bent in the opposite direction; an extremely thick, distally hook-shaped body, probably a transformed spine, is seen along the outer and lower side of the last two (or three) joints. (Fig. 1*b* represents this terminal part of an adult male from behind, fig. 1*c* the same from in front, while fig. 1*d* shows the structure of the part of an immature male from behind).

Uropods with the endopod moderately slender, distinctly overreaching the telson and somewhat longer than the exopod, the end of which is broadly rounded, nearly truncated (fig. 3*n*), while the outer margin bears a number of moderately short, near the end longer, spines along about three-fourths of the length. Telson (Pl. VII, fig. 3*m*) slightly more than three times as long as broad, with its proximal part a little widened; from this part the lateral margins converge very feebly to the end and are furnished with a good number of spines, several of which are conspicuously longer than the others; the terminal incision nearly as in *A. typica*.

Length of a large adult male 9.2 mm., of an ovigerous female 7 mm.

Remarks. — This species is somewhat larger than the three other species hitherto known, and it is readily distinguished by the shape of the frontal plate and rostral process, by having the end of the exopod of the uropods very broadly rounded and nearly transverse, by the large, subtriangular wings of the first abdominal segment in the female, finally by the large process on the gnathopods and the complicate structure of the terminal part of the exopod of third pair of uropods in the male.

Distribution. — The Copenhagen Museum possesses this species from the Bay of Bengal, 1 specimen ("Galathea" Expedition); from lat. 9° 40′ N., long. 108° E., 1 specimen (Capt. Andréa), and from two localities in the Gulf of Siam, viz. between Koh Mesan and Cape Liant, 5—8 fathoms, 1 specimen, and the northern side of Koh Mesan, 10—15 fathoms, 1 specimen (Dr. Th. Mortensen).

Gastrosaccus Norman.

(*Pontomysis* Czern.; *Haplostylus* Kossmann; *Chlamydopleon* Ortmann, not Illig).

Of this genus G. O. Sars (in his Mediterranean Mysidæ) has given an excellent and very detailed description, to which the readers are referred. Here I will add only a few supplementary or restricting remarks to that diagnosis, and most of these remarks are due to structural features observed in the species to be described presently.

The free lobes at the hind margin of the carapace are wanting in some forms. Maxillipeds

with the lobe from second joint small; no lobe from third or fourth joint; a spiniform terminal claw cannot be distinguished among some other spines. Gnathopods with the claw somewhat long, very obvious. Six pairs of thoracic legs in some species with a distinct, terminal, slender, longer or shorter claw (Pl. VIII, fig. 2*g*), while in other forms a claw seems to be wanting. In the male first and second pairs of pleopods always biramous, but the rami of second pair very different in various species; third pair with the exopod very or extremely elongated, while the endopod is sometimes well developed, sometimes rudimentary, sometimes proximally coalesced with the exopod or not marked off from the peduncle (in the latter case really existing?); fourth and fifth pairs small, generally with both rami very conspicuous, but in one species (*G. parvus* m.) with the exopod quite rudimentary.

Remarks. — Several of the species are closely allied; the two species captured by the "Siboga" are in reality so similar to each other that the females may be far from easy to separate, while the male pleopods show most striking differences. If the differences in the male pleopods should be used in the same degree as has been done by various authors as to some other groups of the Mysidæ, the genus *Gastrosaccus* ought to be divided into at least three genera, but judging from the great conformity in most or sometimes in all other particulars, I think such splitting to be far from natural. The result is that I cancel the genus *Haplostylus* Kossmann based on the reduction or absence of the lobes on the carapace and on the reduction (not absence) of the endopod of the third pair of male pleopods. The genus *Chlamydopleon* Ortm. has been imperfectly described, but ORTMANN's type of the genus is a species certainly closely allied to *Gastrosaccus spinifer* Goës.

30. *Gastrosaccus indicus* n. sp. Pl. VIII, figs. 2*a*—2*r*.

Stat. 16. March 15/16. Lat. 6° 59′ S., long. 115° 24′.7 E. Bay of Kankamaraän, S. coast of Kangeang. 22 m. HENSEN vertical net, with electric light. About 20 specimens.
Stat. 37. March 30/31. Sailus ketjil, Paternoster-islands. 27 m. and less. Plankton, surface. 1 specimen.
Stat. 41. April 3. Lat. 7° 25′ S., long. 117° 50′.5 E. 96 m. Plankton, 10 m. to surface. 2 specimens.
Stat. 66. May 7/8. Bank between islands of Bahuluwang and Tambolungan, south of Saleyer. 8—10 m. Plankton. 6 specimens.
Stat. 99. June 28/29/30. Lat. 6° 7′.5 N., long. 120° 26′ E. Anchorage off North-Ubian. 16—23 m. Plankton, surface. 1 specimen.
Stat. 109. July 5/6. Anchorage off Pulu-Tongkil, Sulu-Archipelago. Plankton, townet. 1 specimen.
Stat. 125. July 18/19. Anchorage off Sawan, Siau-island. 27 m. Plankton, townet. 1 specimen.
Stat. 148. August 10. Lat. 0° 17′.6 S., long. 129° 14′.5 E. HENSEN vertical net, from 1000 m. depth to surface. 1 specimen.

Description. — Closely allied to *G. Normani* G. O. Sars. Carapace with a short or very short, triangular or distally more rounded frontal plate (figs. 2*a*—2*b*); no trace of free lobes at the posterior margin. Eyes somewhat small, very much broader than long and about as broad as the eye-stalks, which are very short, twice or more than twice as broad as long above a little nearer the outer than the inner margin. Antennulæ with the first peduncular joint decidedly longer than the sum of the two following joints. The antennal squama (fig. 2*c*)

two and a half times as long as broad, increasing in breadth outwards, with the terminal lobe about twice as broad as long and reaching a little beyond the end of the long second joint of the endopod; a suture across the terminal lobe was not discoverable. Maxillæ (fig. 2*d*) with the exopod smaller and the distal joint of the palp narrower than in *G. Normani*, the latter joint being more than twice as long as broad. First abdominal segment in the female with the lateral plates and its pleopods (figs. 2*o*—2*p*) quite as in *G. Normani*.

The male pleopods differ all less or more from those in *G. Normani*, though they are more similar to those than to the pleopods in any other European species; before the description it may be mentioned that my figures of all five pairs were drawn with the same degree of enlargement, so that a comparison between these figures shows the relative size of these appendages. First pair (fig. 2*h*) have the endopod oblong-ovate and almost three times shorter than the exopod, the distal part of which is divided into four joints. Second pair (fig. 2*i*) somewhat less than twice as long as the first; the peduncle nearly as long as the exopod which is a little curved with the distal half moderately slender and divided into five or six joints, the four distal of which bearing a small spine at the end; the endopod is half as long as the exopod, unjointed or articulated near the end, with the inner margin straight, and it widens gradually from the base to the middle, where it suddenly becomes somewhat narrower and tapers to the end. Third pair (figs. 2*k*—2*l*) even a little more than two and a half times as long as the second and reaching beyond the middle of the telson; an independent endopod is not found, but the basal part of the exopod has the appearance as if the proximal half of an oblong, naked joint is fused with its side, so that the distal part of this joint, the endopod, projects as a kind of process; the articulations of the exopod are partly feeble or even impossible to make out with certainty (but I have drawn them as they appeared to be); the exopod bears two slender spines or nearly spiniform setæ a little beyond the free end of the endopod, and it terminates in three small setæ. Fourth pair of pleopods (fig. 2*m*) are very small, scarcely one-third as long as second pair, with both rami unjointed, the exopod twice as long as the peduncle and a little longer than the endopod. Fifth pair (fig. 2*n*) distinctly longer than the fourth but similar in structure; the exopod somewhat longer and narrower than the endopod.

Uropods (fig. 2*q*) of the usual shape; exopod with about 13 marginal spines; endopod with 5 spines along the inner margin. Telson (fig. 2*q*) somewhat less than three times as long as broad, thus a little shorter than in *G. Normani*, with 9 or 10 spines along each margin, the terminal spine included; among these spines the terminal and the penultimate pairs are much longer than the others, yet at most about twice as long as the antepenultimate pair (fig. 2*r*); the distance between the spines of second and third pairs is much longer than between any two other pairs.

Length of the male 6.8 mm., of the female 7.5 mm.

Remarks. — This species is closely allied to *Haplostylus erythræus* Kossm. founded on a single male, but according to KOSSMANN's description and figures the pleopods differ from those in *G. indicus* in several particulars, among which may be noted, that in the second pair the endopod is nearly as long as the exopod and four-jointed, while the two posterior pairs have the exopod three-jointed.

3. *Gastrosaccus parvus* n. sp. Pl. VIII, figs. 3*a*—3*n*.

Stat. 37. March 30/31. Sailus ketjil, Paternoster-islands. 27 m. and less. Plankton, surface. 1 specimen.

Stat. 315. February 17/18. Anchorage East of Sailus Besar, Paternoster-islands. Depth up to 36 m. Plankton. 1 specimen.

Description. — This species, of which two adult males are to hand, is so closely allied to *G. indicus*, that it may be sufficient to point out the differences. It is somewhat smaller than *G. indicus*. The frontal plate is considerably longer (fig. 3*a*), triangular, somewhat broader than long, with the end subacute. Eyes a little larger than in *G. indicus*, otherwise as in this species. Antennal squama scarcely reaching beyond the end of the second, long joint of the endopod (fig. 3*b*). The male pleopods more slender than in *G. indicus* and differing in many particulars. First pair (fig. 3*c*) with the endopod proportionately still somewhat smaller than in *G. indicus*. Second pair (figs. 3*d*—3*e*) with the exopod a little longer than in *G. indicus*, the basal joint very long, twice as long as the rest which consists of four joints, each of which with a conspicuous, stiff seta; the endopod is much longer than in *G. indicus*, two-thirds as long as the exopod, consisting of six joints, the proximal one a little shorter than the sum of the others, with its proximal three-fifths gradually expanded on the outer side and this triangular expansion terminating in a very long and strong seta. Third pair of pleopods (fig. 3*f*) reaching nearly to the end of the telson; its exopod with the basal part normal, simple, and its end terminating in two minute processes (fig. 3*i*) while setæ seem to be wanting; if the endopod exists, it must be the narrow lobe marked off from the peduncle and lying close to the base of the exopod (figs. 3*g*—3*h*). Fourth and fifth pairs (figs. 3*k* and 3*m*) as short as in *G. indicus*, but differing strongly in having the exopod quite rudimentary, consisting of an extremely minute joint terminating in a seta (fig. 3*l*); the endopod is unjointed, its broad end a little incised, with a few, strong setæ, two of which are curved. The exopod of the uropods with 10 spines; the endopod with 4 spines along the inner margin. Telson (fig. 3*n*) a little shorter than in *G. indicus*, being slightly more than two and a half times as long as broad; each lateral margin with 8 spines, the terminal spine very long, the penultimate still longer, three times as long as the penultimate pair.

Length of an adult male 5.4 mm.

Gastrosaccus bengalensis n. sp.

Of this new species a good number of specimens are to hand; they have been taken pelagically in the Bay of Bengal by the Danish "Galathea" Expedition, Dec. 20, 1845. It is closely allied to *G. indicus* m. and *G. (Haplostylus) erythræus* Kossm., but differs from both in several particulars, especially in the male pleopods. Frontal plate a little more produced than in *G. indicus*, but scarcely as long as in *G. parvus*. Eye-stalks distinctly broader than the eyes. Antennal squama about as in *G. indicus*. The pleopods of the male afford the best characters. The first pair have the endopod longer than in *G. indicus*, somewhat less than half as long as the exopod and somewhat narrow; the exopod with six joints, the proximal one as long as the sum of second to fourth. In the second pair the exopod consists of nine joints, the first joint about as long as the sum of the other joints, the penultimate joint with a very strong, the preceding joint with a strong seta, the latter joint besides with a small, obtuse spine, while an acute spine is found on the antepenultimate joint; the endopod consists of six joints, the first of which as long as the sum of the others and broad to near the middle where a strong seta originates, then suddenly narrower and distally slender; the other joints slender; second joint with a nearly spiniform, curved seta, the four distal joints naked, the sixth joint ending in a fine seta. Third pair of pleopods have the endopod rudimentary, viz. a small, oblong joint marked off from the peduncle; the exopod reaches about the middle of the telson, it has proximally 2 or 3 fine spines and terminates in a minute, nearly claw-like process, before the base of which a minute seta is seen; finally its penultimate joint is distally a little widened

Pseudanchialina n. gen.

This genus is established on *Anchialus pusillus* G. O. Sars and *Chlamydopleon inerme* Illig, both hitherto somewhat imperfectly known. The genus may be characterized in the following way.

Description. — Animals very small, with the cephalothorax somewhat clumsy. Carapace produced into a well-sized frontal plate; posteriorly it covers almost the whole cephalothorax or sometimes even the front part of the first abdominal segment, and its hind margin is proportionately feebly concave. Eyes well developed. Antennulæ with the peduncle considerably thicker in the male than in the female; the rudimentary male lobe with a small bundle of hairs. Antennal squama somewhat small, increasing much in breadth from the base to the end, with the outer margin naked and slightly concave; the marginal denticle unusually long; the terminal lobe with a transverse suture; most of the setæ on the inner and the terminal margins extremely long (Pl. IX, fig. 1 *d*). Labrum produced anteriorly into a very long, distally slender, acute process reaching not quite to the end of second joint of the mandibular palps. Left mandible (Pl. VIII, figs. 4 *a*—4 *b*) with the cutting edge and the movable lacinia well developed; behind the latter two thick setæ, each projecting from a small knot; the molar tubercle well developed though not broad; the palp with the second joint about three times as long as broad and moderately broad in almost its whole length; third joint not quite half as long as the second. Maxillulæ normal (Pl. VIII, fig. 4 *c*); maxillæ (Pl. IX, fig. 1 *e*) nearly as in *Gastrosaccus*. Maxillipeds (Pl. IX, fig. 1 *f*) with first and second joint extremely broad; second joint without lobe; the four following joints somewhat robust, simple; seventh joint very slender, and the claw proportionately long. Gnathopods (Pl. IX, fig. 1 *g*) with the two proximal joints very broad, the other joints normal, somewhat robust, the claw strong and very long. The endopods of the thoracic legs are wanting in my specimens, but according to G. O. Sars they are somewhat slender, with sixth joint divided into a few subjoints. The female marsupium consists of two pairs of plates, first pair very small, the other extremely large.

First abdominal segment in the female of *P. inermis* with the lateral wings essentially as in *Anchialina*; in *P. pusilla* I have not been able to find such wings, but the material of adult females is scanty and badly preserved. Sixth segment in both sexes conspicuously longer than the sum of the two preceding segments (Pl. IX, fig. 1 *a*). All pleopods in the female simple, styliform. In the male first, fourth and fifth pairs of pleopods rudimentary (fig. 1 *h*) and styliform as in the female; third pair in the main as in *Gastrosaccus*, but differing in having the peduncle longer and the exopod proportionately shorter than in that genus; second pair essentially as in some forms of *Gastrosaccus*, but the unjointed endopod still more reduced. Uropods (fig. 1 *i*) somewhat slender with extremely long setæ, especially on the end of the rami; exopod not longer than the endopod, its outer margin naked with a single spine a little in front of the

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and produced as a kind of plate considerably beyond the articulation with the terminal joint, covering the proximal part of the inner side of this joint. Fourth and fifth pairs nearly as in *G. indicus*, but their exopods are three-jointed. Uropods with 12 or 13 spines on the outer margin of the exopod. Telson scarcely three times as long as broad, generally with 12 or 13, in a perhaps somewhat anomalous specimen with only 10, spines along each lateral margin, the two last pairs always very long, a little less or a little more than twice as long as the antepenultimate pair. — Length of the males 5.4—6 mm., of the adult females 5.7—6.5 mm.

end; endopod without spines along the inner margin; otocyst conspicuous. Telson as long as, or slightly longer than, the uropods, with a small number of strong lateral spines distributed with nearly regular intervals; the end is incised with some pairs of slender spines and at the last lateral spine a very strong spine about as long as the terminal breadth of the telson.

Remarks. — The genus is somewhat similar to *Anchialina* in the eyes, the antennulæ, the mouth parts, the thoracic legs and the small wings on first female abdominal segment, while the pleopods in both sexes differ strongly from those in *Anchialina* and agree much more with those in *Gastrosaccus*, but are still more reduced; in the shape of the antennal squama and in shape and spinulation of the uropods the genus differs considerably from the other genera of the subfamily.

32. *Pseudanchialina pusilla* G. O. Sars. Pl. VIII, figs. 4*a*—4*c*; Pl. IX, figs. 1*a*—1*k*.

1883. *Promysis* (?) *pusilla* G. O. Sars, Forh. Vid. Selsk. Christiania for 1883, N° 7, p. 42.
1883. *Anchialus pusillus* G. O. Sars, Challenger Rep., p. 200, Pl. XXXV, figs. 19—20.

Stat. 81. June 14. Pulu Sebangkatan, Borneo-bank. 34 m. Plankton. 9 specimens.
Stat. 117ª. July 12. Lat. 1° 15′ N., long. 123° 37′ E. 80 m. Plankton. 1 specimen.
Stat. 144. August 7/9. Anchorage North of Salomakiëe-(Damar-)island. 45 m. Plankton. 2 specimens.
Stat. 189ª. September 12. Lat. 2° 22′ S., long. 126° 46′ E. Townet. 2 specimens.

Description. — Frontal plate in the female (fig. 1*c*) very large, broad and long, somewhat triangular but distally very broadly rounded; in the male (fig. 1*b*) the plate is somewhat narrower at the middle. Eyes of very moderate size, dark brown or nearly black, as broad as the end of the stalk; distal joint of the stalk cylindrical and nearly as long as broad. Antennal squama (fig. 1*d*) not quite three times as long as broad, increasing strongly in breadth from the base to near the end. (In the female lateral free wings on first abdominal segment could not be found, but I suppose they exist; my material is not well preserved and besides scanty, most of my specimens being males). In the male the second pair of pleopods are a little longer than their segment (fig. 1*h*); the endopod is very short and terminates in a few setæ; the exopod is considerably longer than the peduncle, two-jointed, second joint not half as long as the first and terminating in long setæ. Third pair of pleopods (fig. 1*h*) have the peduncle a little longer than the whole second pleopods; the endopod is a slender and very short joint; the exopod is elongated, about half as long again as the peduncle, reaching beyond the middle of the sixth segment, two-jointed, with its second joint not half as long as the first and terminating in three very long setæ. Telson (figs. 1*i* and 1*k*) not fully three times as long as broad, at the middle not half as broad as at the base, with 7 or 8 spines along each lateral margin, including the postero-lateral spine placed just outside the terminal extremely long spine; each margin of the terminal incision with 5 or 6 spines, the inner of which very small and extremely thin. — Colour yellowish, without darker dots.

Length of both sexes 3.2 mm.

Remarks. — Sars established this species on two specimens taken by the "Challenger" in the Celebes Sea. He says: "My examination of the species has not been so close as could

be wished, since both the specimens in the collection were mounted in Canada balsam on a glass slide, and in such a position as not to admit of examining all the parts satisfactorily". In 1907 I dissolved the balsam, compared his animals with my drawings of the two species taken by the "Siboga" and arrived at the result, that the specimens referred here to *P. pusilla* agree well with the types of SARS.

Distribution. — The specimens described by SARS were taken in the Celebes Sea, lat. 5°44′ N., long. 123°34′ E., October 22, 1874. The Copenhagen Museum possesses 10 specimens captured in the Bay of Bengal by the Danish "Galathea" Expedition, December 20, 1845.

33. (?) *Pseudanchialina inermis* Illig. Pl. IX, figs. 2*a*—2*d*.

1906. *Chlamydopleon inerme* Illig, Zool. Anz. B. XXX, N° 7, p. 209. Fig. 16. (Probably).

Stat. 282. January 15/17. Lat. 8°25′.2 S., long. 127°18′.4 E. Anchorage between Nusa Besi and the N.E.-point of Timor. 27—54 m. Plankton, surface. 4 specimens, all males.

It may be inserted here, that the Copenhagen Museum possesses a female with the marsupium well developed taken in the Bay of Bengal, lat. 6°22′ N., long. 95°54′ E., "Galathea" Expedition.

Description. — This species is so closely allied to *P. pusilla* that it may be sufficient to enumerate the differences. The frontal plate is in the male (fig. 2*a*) somewhat, in the female considerably, narrower than in *P. pusilla*. The eyes of the males are a good deal larger than in the preceding species, the last joint of the eye-stalks not cylindrical but increasing conspicuously in breadth outwards and much broader than long; the single eye preserved in my single female is a little smaller than in the male, yet a little larger than in the preceding species, and the eye-stalk increases in breadth outwards. First abdominal segment in the female with free lateral wings which are shaped nearly as in *Anchialina grossa* with the exception, that while the wing is directed obliquely backwards in the latter species, it is directed obliquely forwards in *P. inermis*. The male pleopods nearly as in the preceding species, but the endopods in second and third pairs are still a little shorter and smaller. Telson (figs. 2*c* and 2*d*) a little more than three times as long as broad and at the middle half as broad as at the base, with 5, in the single female 4, pairs of lateral spines.

Length of a male 2.9 mm., of the female 3.2 mm.

Remarks. — ILLIG's preliminary figures differ from my animals in showing the frontal plate broader, the eyes proportionately somewhat smaller, the endopod of the uropods narrower and the telson a little shorter than in my specimens, but I suppose that these differences may be due to minor inaccuracies or partly to some variation, thinking that the fact that his animals have 5 pairs of lateral spines on the telson, may be a sufficient ground for referring my specimens to his species.

Distribution. — Above is stated that the Copenhagen Museum possesses a specimen from the Bay of Bengal: lat. 6°22′ N., long. 95°54′ E. ILLIG's specimens were taken by the "Valdivia" East of Ceylon and in the "Mentaweibecken".

Subfamily V. Mysinæ.

The essential characters are given in the synopsis on p. 11—12. The subfamily is extremely rich, much richer than all the other five subfamilies together. On p. 12—13 I have divided it into four tribes, all excepting the Heteromysini represented in the "Siboga" collection.

Tribe 1. *Erythropini.*

To this tribe the following genera are referred: *Erythrops* G. O. S., *Parerythrops* G. O. S., *Meterythrops* Smith, *Katerythrops* Holt & Tatt., *Dactylerythrops* Holt & Tatt., *Hypererythrops* Holt. & Tatt., *Synerythrops* n. gen., *Pseudomma* G. O. S., *Amblyops* G. O. S., *Paramblyops* Holt & Tatt., *Dactylamblyops* Holt & Tatt., *Metamblyops* Tatt., *Chalcophthalmus* Illig, *Holmesiella* Ortm., *Longithorax* Illig, *Gymnerythrops* n. gen., *Euchætomera* G. O. S. (*Brutomysis* Chun), *Euchætomeropsis* Tatt., *Mastigophthalmus* Illig, *Cæsaromysis* Ortmann, *Chunomysis* Holt & Tatt. and *Arachnomysis* Chun. Seven of these genera are represented in the "Siboga" collection.

Erythrops G. O. Sars.

This genus has been very fully described by G. O. Sars in his fine monograph of the Norwegian Mysidæ. A single species has been secured by the "Siboga"; as a foot-note the description of another species taken in the Gulf of Siam is added.

34. *Erythrops spinifera* n. sp. Pl. IX, figs. 3*a*—3*c*.

Stat. 166. August 22. Lat. 2° 28′.5 S., long. 131° 3′.3 E. 118 m. Hard, coarse sand. Trawl. 2 specimens.

Description. — This species, of which only an adult female and an immature specimen are to hand, is allied to the Norwegian forms. The carapace has a small, triangular, acute frontal plate or rostral process (fig. 3*a*) which is broader than long; the front margin outside this rostrum is concave but nearly straight towards the lateral margins. The eyes are extremely large, depressed, dark reddish-brown. The antennal squama is five times as long as broad, its outer margin straight, without serration, the marginal tooth proportionately long, the terminal lobe as long as broad, reaching somewhat beyond the tooth.

Uropods (fig. 3*b*) with both rami slender, the exopod nine or ten times as long as broad. The telson (fig. 3*c*) is very characteristic; it is half as long as the exopod of the uropods, one-fourth again as long as broad, with the lateral margins somewhat concave and each furnished with 10—13 spines, all moderately small excepting the terminal one which is much longer than the others; the end is transverse, proportionately short, only between one-third and one-fourth of the basal breadth, with two pairs of spines, both very long, but the inner pair somewhat longer than the outer. In both specimens the two terminal spines of each half are inserted near each other, while a good interval is found between the two spines of the inner pair; this interval

bears in the adult specimen a pair of well developed, plumose setæ, but in the other specimen only a pair of rudiments more like minute spines than setæ.

Length of the adult female 6.5 mm.

Remarks. — This species is perhaps more allied to *E. erythrophthalma* Goës than to any other form hitherto known, but it is easily distinguished from all European species by having the telson considerably longer and armed with spines along its lateral margins. In these respects it shows some resemblance to *E. brevisquamosa* Illig, but the latter species has very small eyes, while these organs are very large in *E. spinifera*.

Meterythrops S. J. Smith.

The genus *Parerythrops* G. O. S. has been very fully described by SARS in 1870. *Meterythrops* Smith is very closely allied to *Parerythrops*, the only good difference being the first pair of male pleopods which in *Parerythrops* are quite rudimentary, in *Meterythrops* well developed, having as in *Erythrops* the exopod long with several joints, the endopod short, unjointed. According to my opinion, the genus *Meterythrops* and several other genera of this subfamily are far from valuable, but for various reasons I cannot attempt a real revision of the genera established, and therefore I think it better to keep the genus *Meterythrops* in the present paper.

35. *Meterythrops indica* n. sp. Pl. IX, figs. 4*a*—5*b*.

Stat. 230. November 14. Lat. 3° 58′ S., long. 128° 20′ E. HENSEN vertical net, from 2000 m. to surface. 1 specimen, a probably adult male.

Description. — This species is in general aspect and most features allied to *M. picta* Holt & Tatt., but the antennal squama and the telson show some differences. The animal is moderately robust. The carapace posteriorly deeply emarginate; its frontal plate is a broad, low triangle with the vertex broadly rounded (fig. 4*a*). Eyes large, especially very broad, pale golden brownish; eye-stalks short. Antennular peduncle in the male thick; third joint scarcely longer than the sum of the two proximal joints, only a little longer than broad, with the male lobe proportionately large, protruding. Antennal squama nearly four times as long as broad,

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Erythrops minuta n. sp.

Description. — Allied to the Norwegian *E. serrata* G. O. S. Eyes much smaller than in this species, depressed, seen from above nearly semicircular, scarcely or slightly broader than the eye-stalks, the distal joint of which is strongly widened nearly from the base, with the proximal two-thirds of its anterior margin very convex. Antennal squama about four times as long as broad; a terminal lobe is scarcely developed, and the distal marginal denticle is long, strong and overreaches the subtransverse terminal margin very much; the outer margin has besides three well developed, spiniform denticles, the proximal one a little more removed from the base than the length of the interval between first and second denticle, while the intervals between all four denticles are nearly equally long.

The telson is much broader than long; the posterior margin slightly more than one-third as long as the breadth, with 4 strong spines and a pair of feathered setæ; the interval between the spines of the inner pair is more than twice as long as the interval between the two spines on the same half; in the female the spines of the inner pair are as long as the terminal margin and somewhat longer than the outer pair, while in the male the inner spines are considerably longer than the terminal margin and twice as long as the outer pair. — Length of an adult male 2.9 mm., of a female with marsupium 2.6 mm.

Locality. — Gulf of Siam, at the island of Koh Kam, 10 fathoms, gravel and shells. A small number of specimens, mostly very mutilated, have been taken by Dr. TH. MORTENSEN, February 4, 1900, and are preserved in the Copenhagen Museum.

on the outer margin with a single denticle less or more distant from the terminal good-sized tooth; the terminal lobe a good deal broader than long and overreaching the terminal tooth. (Endopods of the thoracic legs lost).

Abdomen about as in *M. picta*. Uropods slender (fig. 4*b*); the exopod nearly seven and a half times as long as broad, much longer than the endopod. Telson shorter than in *M. picta*, not fully half as long again as broad, with the lateral margins conspicuously concave behind the broad basal third; its end is truncate, very short, and if an armament existed is has been lost, only rudiments of the usual pair of setæ and of an exceedingly fine pair of postero-lateral spines being preserved. — The colour of the animal is yellowish, with the gastric region reddish-brown.

Length of the single, probably adult, male 9.7 mm.

Synerythrops n. gen.

Description. — Allied to *Erythrops* G. O. S., *Parerythrops* G. O. S., and *Katerythrops* Holt & Tatt. Eyes of very moderate size, not depressed. Antennular peduncle (in the female) robust. Antennal squama well developed, of usual shape. Left mandible (Pl. IX, figs. 5*a* and 5*b*) with the incisive part and the movable lacinia well developed, but the row of strong setæ is short, while the molar process is very broad, with the end cut off vertically; second joint of the palp much expanded, only a little more than twice as long as broad, while the third joint is very slender. Maxillæ (Pl. IX, fig. 5*c*) oblong; terminal joint of the palp unusually short, not longer than the first, slightly longer than broad and somewhat expanded. Maxillipeds (fig. 5*d*) robust, second joint with an oblong, very conspicuous lobe, third joint with a small but distinct lobe. Gnathopods and thoracic legs (fig. 5*e*) more slender than in *Parerythrops*, but thicker than in *Erythrops*. Otherwise nearly as in *Erythrops*. (Male pleopods unknown).

Remarks. — This genus is established on a single, immature female specimen, because the mouth-parts present differences from those in the above-named genera.

36. *Synerythrops intermedia* n. sp. Pl. IX, figs. 5*a*—5*e*; Pl. X, figs. 1*a*—1*c*.

Stat. 185. September 12. Lat. 3° 20′ S., long. 127° 22′.9 E. Manipa-strait. HENSEN vertical net, from 1536 m. to surface. 1 specimen, an immature female.

Description. — The carapace seems to reach nearly to the end of thorax; its frontal plate (Pl. X, fig. 1*a*) is somewhat large, very broad, subtriangular, a little more than twice as broad as long, with the vertex moderately broadly rounded. Eyes of very moderate size, subglobose, light reddish-brown; distal joint of the eye-stalks very much broader than long. Antennal squama slightly overreaching the antennular peduncle, somewhat less than four times as long as broad, with the outer margin slightly concave; terminal lobe much broader than long, overreaching the small marginal tooth. Uropods (Pl. X, fig. 1*b*) with the exopod not quite seven times as long as broad and somewhat more than twice as long as the telson. Telson (Pl. X, figs. 1*b* and 1*c*) slightly longer than broad, subtriangular, with the major part of the lateral margins nearly straight and the end cut off transversely; the end bears a couple of strong and very long spines, between which the two usual setæ are seen; the distal part of

each lateral margin has 4 spines gradually increasing in length backwards, but the last lateral spine is not half as long as one of the terminal spines.

Length of the specimen, a female without marsupium, 7.2 mm.

Dactylamblyops Holt & Tatt.

This genus has been established in 1906 in a preliminary paper on an antarctic species. In the main paper on the Schizopoda from the "National Antarctic Expedition", 1908, TATTERSALL described and figured the typical form and enumerated three other species, one of which is arctic, while the others are from the west coast of Ireland. The new species from the "Siboga" agrees on the whole moderately well with the diagnosis of the genus, excepting that the process at the eyes has only its end free and that the gnathopods are considerably longer and more slender than in *D. Hodgsoni* Holt & Tatt. and not much shorter than the first pair of thoracic legs.

37. *Dactylamblyops fervida* n. sp. Pl. X, figs. 2*a*—2*h*.

Stat. 141. August 5. Lat. 1°0'.4 S., long. 127°25'.3 E. 1950 m. HENSEN vertical net, from 1500 m. depth to surface. 1 specimen, a female with the marsupium half developed.

Description. — Somewhat slender. The frontal plate (fig. 2*a*) is very broad at the base, triangular, about twice as broad as long, with the apex narrowly rounded. Eyes somewhat small, pale golden brownish; distal joint of the eye-stalks considerably broader than long, with the process at the inner side of the cornea small, having only its terminal surface free. The antennal squama (fig. 2*a*) is broad and somewhat short, not reaching the end of the antennular stalk, not fully two and a half times as long as broad, with the outer margin slightly, the inner conspicuously, convex, the marginal denticle not spiniform but shaped as a broad and moderately short triangle; the terminal lobe overreaches the marginal denticle and is nearly twice as broad as long.

Uropoda long and slender (fig. 2*g*); exopod almost twice as long as the telson, between ten and eleven times as long as broad, considerably longer than the endopod. Telson (figs. 2*g* and 2*h*) shaped almost as in *D. Hodgsoni*, very oblong-triangular with the end narrowly rounded, scarcely twice as long as broad; the lateral margins very feebly concave a little beyond the middle and armed at each side along a little more than the distal half with 19 strong spines, while the end bears 2 very strong and closely set spines somewhat longer than the others; terminal setæ wanting.

Length of the female with the marsupium half developed 8.5 mm.

Remarks. — The figures (figs. 2*b*—2*f*) of the left mandible and its distal part, of the left maxilliped, the left gnathopod and the major distal part of the endopod of first left thoracic leg may convey a sufficient idea of the shape of these appendages.

Euchætomera G. O. Sars.

In the "Challenger" Report SARS has given a description of this genus. In 1905 HOLT & TATTERSALL correctly stated that it is very closely allied to *Erythrops* G. O. Sars and pointed

out the main differences. In 1896 CHUN established the genus *Brutomysis* on a specimen of a new species, *B. Vogtii* Chun, taken near Madeira, but the differences between *Euchætomera* and *Brutomysis* pointed out by him cannot be considered of generic value. Five valid species have been established: *E. typica* G. O. S., *E. (Brutomysis) Vogtii* Chun, *E. limbata* Illig, *E. tenuis* G. O. S. (= *E. Fowleri* Holt & Tatt.), and *E. glyphidophthalmica* Illig; on a sixth species, *E. merolepis* Illig, TATTERSALL has established a closely allied genus, *Euchætomeropsis*. The "Siboga" collection contains two species, one of which is new.

38. *Euchætomera tenuis* G. O. Sars. Pl. X, fig. 3*a*.

1883. *Euchætomera tenuis* G. O. Sars, Forh. Vid. Selsk. Christiania for 1883, N° 7, p. 42.
1885. *Euchætomera tenuis* G. O. Sars, Challenger Rep. p. 214, Pl. XXXVII, figs. 21—24.
1905. *Euchætomera Fowleri* Holt & Tattersall, Fisheries, Ireland, Sci. Invest. 1902—3. [1905], p. 123 and 144, Pl. XXIV, figs. 1—3.

Stat. 143. August 7. Lat. 1° 4′.5 S., long. 127° 52′.6 E. 1454 m. HENSEN vertical net, from 1000 m. depth to surface. 1 specimen, an adult female.
Stat. 276. January 9. Lat. 6° 47′.5 S., long. 128° 40′.5 E. HENSEN vertical net, from 750 m. depth to surface. 1 specimen, a probably adult male.

Remarks. — In 1905 HOLT & TATTERSALL gave an excellent description with a fine figure of this species and pointed out the differences between their animals and SARS' representation of his *E. tenuis*. In 1907 I examined SARS' type preserved in the British Museum, and found that it agrees perfectly with HOLT & TATTERSALL's description and figure of *E. Fowleri*, but not with the figures in the "Challenger" Report. SARS has overlooked that the functional facets of the eyes are confined to an anterior and a small postero-lateral part, while a large intermediate area has no retinal elements. Also the telson does not agree with SARS' figure. In 1909 TATTERSALL cancelled *E. Fowleri* as a synonym, because, as he states in his paper on the "Maia" and "Puritan" Schizopoda, I had told him my result in a letter and HOLT in comparing the types of *E. tenuis* with *E. Fowleri* had arrived at the same result.

A few remarks may be added. The antennal squama (fig. 3*a*) is at least four and a half times, generally five times, as long as broad, with the outer margin feebly concave.

Length of the female with marsupium 7.5 mm.; the male is a little smaller.

Distribution. — The "Challenger" specimen was secured, "at the surface of the sea, in the South Pacific, off the coast of Chili". HOLT & TATTERSALL mention the species from off the west coast of Ireland, from the Bay of Biscay and from the Mediterranean; it has been taken by the Prince of Monaco at lat. 31° 06′ N., long. 24° 06′.45″ W., 5000—0 m. (HANSEN), and in his Report on the Schizopoda from the German Plankton Expedition ORTMANN enumerates a number of stations in the tropical Atlantic on both sides of the equator, in the Sargasso Sea and the "Florida current".

39. *Euchætomera oculata* n. sp. Pl. X, figs. 4*a*—4*e*.

Stat. 185. September 12. Lat. 3° 20′ S., long. 127° 22′.9 E. HENSEN vertical net, from 1536 m. to surface. 1 specimen, an immature female without marsupium.

Description. — Closely allied to *E. tenuis* G. O. S., but the body is more clumsy, and it is sharply distinguished by the eyes and the antennal squama. The carapace is produced into a conspicuously protruding, somewhat narrow, triangular frontal plate (fig. 4*a*), the end of which is narrowly rounded. The eyes are thicker than in *E. tenuis*, the triangular postero-lateral area with functional facets is very much larger than in the latter species, so that the interval between the anterior and the postero-lateral part of the eye is much shorter than in *E. tenuis*. The squama (fig. 4*b*) is shorter and broader than in *E. tenuis*, only three and a half times as long as broad; its outer margin is straight, convex near the base; the marginal denticle is well developed, the terminal lobe only a little broader than long. The telson (figs. 4*d* and 4*e*) as long as broad, its truncate end very short, only one-fifth as long as the breadth of the telson, with a single pair of very oblique, slender spines at the angles and a pair of small protuberances somewhat removed from each other (from which probably a pair of setæ broken off in the specimen originate).

Length of the immature specimen 5.8 mm.

Remarks. — *E. oculata* is besides closely allied to *E. glyphidophthalmica* Illig, but according to Illig's preliminary description and figures the latter species has the posterior margin of the telson much longer than that in *E. oculata*, and the two areas of each eyes are larger, separated only by "a well developed impression".

Gymnerythrops n. gen.

Description. — This diagnosis is incomplete because only three immature females are to hand. The cephalothorax is unusually long, much longer than the abdomen, and increases gradually and very considerably in depth and breadth from the base of the maxillipeds to a point somewhat behind the origin of the last pair of thoracic legs, and the last thoracic segment is below about twice as long as the sum of the six other thoracic segments, with the result that the lower margin of the thorax is very arched and a very considerable portion of the lateral surface of the cephalothorax from the maxillæ to the beginning of the abdomen is left uncovered below the lower margin of the carapace. The carapace covers dorsally the thorax excepting a short posterior part and laterally sometimes the first and a part of the second abdominal segment; anteriorly (fig. 5*b*) it has a long and very broad frontal plate furnished with a rostral process, while its antero-lateral corners are produced into conspicuous processes. Eyes well developed. The antennular peduncles somewhat long and strong, with a spiniform process from the upper and a similar one from the lower terminal margin at the base of the flagella; the outer flagellum long and well developed, the inner short and thin (fig. 5*b*). Antennæ without squama (fig. 5*c*). Mandibles with the incisive part well developed with some triangular, sharp teeth (fig. 5*e*), the movable lobe well developed on the left mandible (also on the right?), while setæ and molar process are completely wanting; palp with the second joint somewhat long and very slender (fig. 5*d*). (The dissection of the following mouth-parts failed; maxillulæ were not found and the maxillæ, which are extremely small, could not be made out in detail.) Maxillipeds (fig. 5*f*) somewhat aberrant; second joint very long and distally narrow, produced

into an oblong, rectangular lobe reaching beyond the end of fourth joint and with a few strong setæ along the inner margin; the sum of the following five joints somewhat shorter than the second joint and these joints besides very slender and nearly naked, only a couple of setæ being inserted on the sixth joint; claw short but very distinct.

Gnathopods (fig. 5*g*) slender, with a single seta only on the sixth joint; seventh joint unusually long, a little shorter than the fifth, terminating in a slender claw; second joint of the exopod very broad, rounded. The thoracic legs (figs. 5*a* and 5*h*) of very moderate length and very slender; sixth joint with a single, transverse articulation a little beyond the middle; seventh joint long with a fine claw; the exopod with the second joint large, very broad and rounded. Uropods slender; both rami without spines but with extremely long setæ along the inner margin and on their distal end; endopod only rather little shorter than the exopod, with the otocyst well developed. Telson short.

Remarks. — Though the adult male is unknown it may be considered as certain that it has the pleopods well developed. This curious type is to be referred to the Erythropini, as it is allied to *Longithorax* Illig, *Chunomysis* Holt & Tatt., *Cæsaromysis* Ortm. and *Arachnomysis* Chun. In *Longithorax* the antennal squama is well developed; in *Cæsaromysis* it is small, styliform and near its insertion a spiniform process originates; in *Chunomysis* and *Arachnomysis* this process is present, while the squama is wanting as in *Gymnerythrops*, but in this genus the process is wanting. In *Longithorax* the last thoracic segment is considerably elongated, and this structural feature is still more developed in *Gymnerythrops*. The gnathopods and thoracic legs in *Gymnerythrops* show much resemblance to those in *Longithorax*; in both genera the sixth joint of the thoracic legs has only a single secondary articulation: it is the distal, vertical articulation which has been preserved, while the more proximal, oblique, secondary articulation found in most genera of the tribe Erythropini is wanting. It may be inserted here, that in *Cæsaromysis* and *Arachnomysis* the sixth joint of the thoracic legs has two articulations, but in the latter, and according to Ortmann's figure also in the former, genus both articulations are vertical or nearly so. It is already stated, that *Gymnerythrops* is allied to *Longithorax* in the structure of the thorax and the thoracic legs, but it differs in having no antennal squama and in the mandibles, the length of the carapace, the uropods, etc.

40. *Gymnerythrops anomala* n. sp. Pl. X, figs. 5*a*—5*k*.

Stat. 138. August 3. Anchorage on the east coast of Kajoa-island. 66 m. Townet. 1 specimen, an immature female.

Stat. 144. August 7/9. Anchorage North of Salomakiëe-(Damar-)island. 45 m. Plankton. 2 specimens, both immature females.

Description. — The frontal plate (fig. 5*b*) at the base as broad as the carapace, about twice as broad as long, with the lateral margins oblique, the front margin nearly straight and transverse on both sides of the narrow rostrum and about half as long as the basal breadth of the plate; the antero-lateral angles are rounded; the rostrum named is somewhat long and narrow, nearly spiniform; the margins of the plate are bent a little upwards. The antero-lateral angles of the carapace behind the frontal plate produced into a long and robust, spiniform process

directed obliquely outwards. The eyes moderately small, semi-globular, black; the eye-stalks on the whole conical, at the end slightly broader than the eyes; their distal joint considerably broader than long. The antennulæ with the third joint of the peduncle a little more than twice as long as broad, terminating above and below in the processes mentioned in the description of the genus; the inner flagellum slightly longer than third peduncular joint, very slender, with 6 joints.

Sixth abdominal segment a little longer than the sum of the two preceding segments (fig. 5*a*). The female pleopods simple, styliform (fig. 5*a*), the anterior pairs very short, last pair longer but yet short. The uropods (fig. 5*i*) slender; the exopod at least eight times as long as broad, rather little longer than the endopod and more than two and a half times as long as the telson; the setæ on the distal end and along a part of the inner margin of both rami extremely long. Telson (figs. 5*i* and 5*k*) short, slightly longer than broad, narrowing strongly backwards, with the proximal half of the lateral margins very convex; the posterior end is nearly three and a half times shorter than the breadth of the telson somewhat behind its base, with the lateral corners produced into very oblong-triangular, acute processes separated by a proportionately deep and broadly rounded incision, at the middle of which originate a pair of feathery setæ almost as long as the telson. — Colour light reddish, without spots.

Length of one of the females with the marsupium rudimentary 4.8 mm.

Remarks. — On fig. 5*a* the small, still feebly developed marsupial plate of the last thoracic leg is seen directed backwards, which seems to be its natural position.

Arachnomysis Chun.

Description. — Carapace anteriorly abbreviated (Pl. XI, fig. 1*b*), without frontal plate and terminating somewhat behind the origin of the eye-stalks; the front margin is transverse with acute teeth or processes, and the antero-lateral corners are produced into an acute, triangular lobe directed outwards; each lateral margin of the carapace somewhat behind the middle with an oblong-triangular, spiniform process, and the part of the carapace between the front end and that pair of lateral processes is narrow, covering only the upper surface and the upper part of the sides of the cephalothorax, while behind the processes the carapace is gradually widening and posteriorly emarginate, leaving the posterior part of the cephalothorax uncovered. The eye-stalks with their eyes even a little longer than the peduncle of the antennulæ, pellucid, so that the nervous elements are visible (fig. 1*c*); the proximal joint of the stalks is long and slender (fig. 1*b*), the distal joint conical, increasing gradually somewhat or much in thickness to the retina, which is feebly convex; the structure of the eyes reminds of that in larval Sergestidæ. Antennulæ normal; first and third peduncular joint nearly equal in length; male lobe thick and somewhat protruding. Antennæ without squama, but the joint otherwise bearing this plate is on the outer side produced into a triangular, acute process directed outwards (fig. 1*d*). Labrum rounded in front (fig. 1*d*). Left mandible (figs. 1*e* and 1*f*) with the incisive part and the movable lobe very well developed, while setæ are wanting between that lobe and the low molar process. Mandibular palps long and somewhat slender; first joint even longer than broad; second joint

several times as long as broad with at most a few hairs; third joint half as long as, and not narrower than, the second, with numerous setæ. Maxillulæ (fig. 1 *g*) normal. Maxillæ (fig. 1 *h*) normal; terminal joint of the palp two and a half or three times as long as broad. Maxillipeds (fig. 1 *i*) without epipod or exopod, robust, with numerous setæ and some among them thick; second joint almost parallel with the median line (fig. 1 *d*), with a somewhat small lobe (fig. 1 *i*), third joint as broad and at the inner side almost half as long as the second, without lobe; sixth joint with four strong terminal spines behind the insertion of the seventh joint, which is as long, but not half as broad, as the sixth; claw strong. The interval between the maxillipeds and the gnathopods longer than the distance from the gnathopods to the last thoracic legs.

The gnathopods (figs. 1 *a* and 1 *d*) very long, as long as the carapace, and extremely thick; fifth joint a little longer than the sixth, which is widened towards the oblique end against which the seventh joint terminating in a strong claw is bent about as in the first pair of legs in *Crangon* (sens. lat.); the exopods have the second, long joint extremely slender. Thoracic legs extremely long and slender; sixth joint divided by two vertical articulations, the proximal one a little beyond the middle; seventh joint somewhat small, terminating in a fine claw; exopods with the subbasal joint extremely slender. The female marsupium consists of two pairs of lamellæ.

At least the five anterior abdominal segments with some less or more developed teeth or spiniform processes on the hind margin above and on the sides; sixth segment at most somewhat longer than the fifth. Female pleopods (fig. 1 *l*) short, cylindrical styles. Male pleopods well developed, essentially as in *Erythrops*, but none of the setæ on fourth pair seem to show any peculiarity. Uropods very slender, without spines, but their setæ very long, especially on the ends of the rami; endopod even slightly longer than the exopod; otocyst small. Telson not one-third as long as the uropods (fig. 1 *k*), with the end truncated, short.

Remarks. — This genus, which presents a quite peculiar aspect, is, as already stated by Holt & Tattersall, allied to *Chunomysis* Holt & Tatt., but differs at least in the shape of the eye-stalks and eyes and in the great distance between the maxillipeds and the gnathopods. Furthermore Holt & Tattersall do not state whether the maxillipeds in *Chunomysis* possess epipod and exopod or whether both are wanting as in *Arachnomysis* or perhaps at least an epipod exists; finally the endopod of the gnathopods, and especially its distal part, differs very considerably in the two genera. Holt & Tattersall have established the subfamily Arachnomysinæ on the purely negative character that a squama is wanting in its two genera, *Chunomysis* and *Arachnomysis*, but this artificial classification I can not adopt. *Chunomysis*, which differs less from the other Mysinæ than *Arachnomysis*, is allied to *Cæsaromysis* Ortm., which possesses an extremely small, styliform squama, thus constituting a connecting link between *Chunomysis* and more normal forms of the Erythropini. Furthermore it may be pointed out that the peculiar shape of the distal part of the gnathopods in *Arachnomysis* is only a higher development of a feature already perceptible in *Euchætomera typica* G. O. S. and *E. Vogtii* Chun. And for these reasons I think it better not even to establish *Arachnomysis* itself as a tribe, but to refer it to the Erythropini.

Hitherto *Arachnomysis* comprised only a single species, *A. Leuckartii* Chun, from the Mediterranean. The "Siboga" collection contains a single specimen of a closely allied species.

41. *Arachnomysis affinis* n. sp. Pl. XI, figs. 1 *a*—1 *l*.

Stat. 141. August 5. Lat. 1°0′.4 S., long. 127° 25′.3 E. 1950 m. HENSEN vertical net, from 1500 m. depth to surface. 1 specimen, a female with the marsupium nearly rudimentary.

Description. — This species is so closely allied to *A. Leuckartii* (of which I have examined two adult specimens, male and female), that it may be sufficient to mention the differences and the telson. The distal joint of the eye-stalks with the eye is scarcely twice as long as broad, thus conspicuously less thick than in *A. Leuckartii*, in which that joint with the eye is less than half as long again as broad. The front margin of the carapace has 5 triangular, short denticles, while in *A. Leuckartii* they are much or very much longer, slender and spiniform. The four anterior abdominal segments each with a robust, short, acute process at each postero-lateral angle; the five anterior segments each with from 2 to 4 small, acute teeth along the dorsal half of the posterior margin; sixth segment dorsally unarmed; in *A. Leuckartii* all six segments each with 7 much longer, spiniform, slender processes along the hind margin. Telson a little longer than broad, tapering from before the middle to the truncate end, which is nearly one-third as long as the breadth of the plate; the postero-lateral angles with minute protuberances, while spines and setæ are wanting in the specimen.

Length of the specimen with the marsupium less than half developed 4.8 mm.

Remarks. — *A. affinis* is very closely allied to *A. Leuckartii*, but I think that the differences pointed out, which are very conspicuous, cannot be due to age, as my specimen of *A. affinis*, though immature, shows both pairs of marsupial lamellæ, and the differences in the dimensions of the eyes and the armature with spines are very striking.

Tribe 2. *Leptomysini.*

To this tribe the following genera are referred: *Mysidopsis* G. O. S., *Mysideis* G. O. S., *Pseudomysis* G. O. S., *Bathymysis* Tatt., *Leptomysis* G. O. S., *Uromysis* n. gen., *Mysidetes* Holt & Tatt. and probably the still imperfectly known genus *Metamysidella* Illig. Though the characters pointed out in the synopsis on p. 12—13 between this tribe and the Erythropini may seem somewhat unimportant, I think that the tribe is very natural, as all its genera are allied to each other and rather distant from the genera referred by me to the Erythropini. The shape of the antennal squama and its furniture with setæ are very different in the two groups, and *Euchætomeropsis* Illig constitutes no real exception. Above on p. 10 I have set fourth good reasons for removing *Holmesiella* Ortm. from the vicinity of *Leptomysis* to the Erythropini; it may be added that the endopod, not the exopod, of fourth pair of male pleopods being elongated in *Holmesiella* points in the same direction.

The "Siboga" collection contains only a single species, which differs so much from the forms known that it is necessary to establish a new genus for its reception.

Uromysis n. gen.

Description. — General aspect nearly as *Mysidetes* Holt & Tatt. Carapace anteriorly produced into a moderate frontal plate (Pl. XI, figs. 2 *a* and 2 *b*), posteriorly considerably

emarginate, not covering the posterior part of the cephalothorax. Eyes very large, eye-stalks moderately long. Antennulæ with the first joint of the peduncle slightly longer than the sum of the two next joints; male lobe as long as the third peduncular joint. Antennal squama lanceolate with a distal transverse suture, and setæ along both margins. Labrum obtuse in front. Left mandible (figs. 2*c* and 2*d*) has the incisive part strongly produced with a number of obtuse teeth of various size, the movable lacinia broad, the setæ extremely small and no vestige of a molar tubercle; right mandible almost as the left; the palp with the second joint considerably curved, somewhat broad and distally tapering, third joint a little more than half as long as the second. Maxillæ (fig. 2*e*) nearly as in *Mysideis insignis* G. O. S.; the exopod unusually small. Maxillipeds (fig. 2*f*) have the endopod very broad as in *Mysideis*, but with a small number of setæ along the inner margin; the proximal joints without any perceptible lobe; claw strong; exopod present (not drawn). The gnathopods (fig. 2*g*) differ widely from those in *Mysideis*; they are much more slender than the maxillipeds and only a little stronger than the thoracic legs; the claw is strong and very long. The thoracic legs (fig. 2*h*) moderately slender; sixth joint divided into three subjoints by two vertical articulations; seventh joint and the claw claw-shaped and extremely long. The marsupium seems to be formed by two pairs of lamellæ.

Pleopods in the female nearly as in *Mysideis insignis* G. O. S. Pleopods in the male essentially as in *Leptomysis gracilis* G. O. S.; endopod of first pair unjointed, short, with the usual lateral plate (fig. 2*i*); exopods of second, third and fifth pairs a little longer than the endopods but without modified equipment; exopod of fourth pair somewhat longer than the endopod, with a strong spine and a thick seta on the outer side respectively of the antepenultimate and the penultimate joint (fig. 2*k*). Uropods somewhat slender, with long setæ along both margins of both rami (fig. 2*l*); exopod somewhat longer than the endopod, without spines, while the endopod has spiniform processes, some among them very long, from the lower side along the inner margin (figs. 2*m* and 2*n*). Telson (figs. 2*m* and 2*n*) essentially as in *Mysidetes*, much shorter than the endopod of the uropods, tapering nearly from the base, with lateral spines and posteriorly a deep incision.

Remarks. — As already mentioned, this new genus agrees with *Mysideis* in some, with *Leptomysis* in other, features, while the telson is about as in *Mysidetes*. But the mandibles differ strongly from those in these genera, and the armature of the endopod of the uropods is unique.

42. *Uromysis armata* n. sp. Pl. XI, figs. 2*a*—2*n*.

Stat. 109. July 5/6. Anchorage off Pulu Tongkil, Sulu-Archipelago. 13 m. Plankton. 15 specimens (most of them immature).

Description. — Body slender. Frontal plate (figs. 2*a*—2*b*) triangular, a little more than twice as broad as long, with the end subacute and the oblique margins nearly straight. Eyes very large, dark brown; the distal joint of the eye-stalks somewhat broader than long, increasing in breadth from the base to the end, which is as broad as the cornea. Antennal squama reaching conspicuously beyond the end of the antennular peduncle, very oblong-lanceolate, about seven times as long as broad; the joint beyond the transverse suture about, or slightly more than, twice as long as broad.

Sixth abdominal segment somewhat less than twice as long as the fifth. The male pleopods have been described above; it may be added that the spine at the outer distal angle of the antepenultimate joint of the exopod is even slightly longer than the sum of the three distal joints and about as long as the strong, curved seta at the angle of the following joint (fig. 2 *k*). The figure of the uropods of the male (fig. 2 *n*) as compared with that of the female (fig. 2 *m*) seems to indicate essential sexual differences in the shape and armature of the endopod, but the differences observed are in the main due to the fact that the endopod of the male is seen vertically from above, so that the lateral serrations, the places of insertion of the setæ, are visible along both margins, while an acute protuberance projects upwards and backwards on the upper side a little from the outer margin, and the slender processes project inwards and downwards from the lower side near the inner margin; in the female (fig. 2 *m*) the endopod has been turned a little round its longitudinal axis, with the result that the insertions of the setæ along the inner margin are seen on the upper surface, that those along the outer margin are situated below and therefore invisible from above, that the acute protuberance mentioned projects from the new exterior margin which shows a sharp incision or sudden break, and finally that the inner processes project not from the lower surface but from the inner margin and are directed horizontally inwards. In both sexes the distal half has 4 very strong, somewhat curved processes, the proximal one being the longest and a little behind that a single, small process is seen, while the larger distal part of the proximal half has almost a score of smaller or small, acute processes. Telson somewhat more than half as long as the uropods (figs. 2 *m* and 2 *n*), a little more than half as broad as long, tapering nearly from the base; the posterior incision about one-fourth of the total length of telson, with its margins convex without spines or setæ and the angular base subacute; the lateral lobes are distally narrow, each terminating in a moderately large spine, a little in front of which a somewhat smaller spine is found, and each of the lateral margins besides with 8—11 spines, the first not far from the base.

Length of an adult male 4 mm., of a female with marsupium 3.5 mm.

Tribe 3. *Mysini.*

To this very natural tribe a large number of genera are to be referred, viz. *Stilomysis* Norm., *Macropsis* G. O. S. (= *Parapodopsis* Czern. and *Mesopodopsis* Czern.), *Hemimysis* G. O. S., and the numerous genera into which the genus *Mysis* Latr. in the sense of G. O. Sars in 1877 and 1879 has been divided by Czerniavsky, Norman, Sars (in his later writings) and some other authors: *Macromysis* White, *Praunus* Leach (= *Kesslerella* Czern. and *Synmysis* Czern., partim), *Schistomysis* Norm. (*Austromysis* Czern. and *Synmysis* Czern., partim), *Neomysis* Czern., *Diamysis* Czern., *Dasymysis* Holt & Beaum. (*Acanthomysis* Czern.), *Michtheimysis* Norm., *Antarctomysis* Coutière, *Potamomysis* Czern., *Paramysis* Czern., *Mesomysis* Czern., *Limnomysis* Czern., *Metamysis* G. O. S., *Caspiomysis* G. O. S., and *Euxinomysis* Czern. The value of many of these genera is but small.

Of animals belonging to this tribe the "Siboga" collection contains only a single specimen, an adult male, and it is even necessary to establish a new genus for its reception.

Anisomysis n. gen.

Description (based on the male). — Body somewhat slender. Carapace produced into a moderately large frontal plate (Pl. XII, fig. 1*a*), posteriorly not covering the entire cephalothorax. Eyes very large; their stalks of very moderate length. Antennular peduncle with the male lobe large, somewhat longer than broad; the distal inner margin of this lobe strongly concave, and the terminal part almost three times narrower than the proximal and feebly curved (fig. 1*b*). Antennal squama (fig. 1*c*) narrow, lanceolate, with setæ along both margins and distally with a transverse suture. Labrum obtuse in front, without process. Left mandible (figs. 1*d* and 1*e*) with a thick, movable lobe, two extremely broad, curved and distally digitate setæ, and the molar process well developed; palp somewhat slender. Maxillæ normal, but the palp narrow, with its distal joint almost two and a half times as long as broad, increasing a little in breadth from the base to slightly beyond the middle. Maxillipeds (fig. 1*f*) broad, with many setæ along the inner side; second joint with a small lobe, the following joint without any lobe; claw very long. Gnathopods (fig. 1*g*) with second joint very broad, the other joints slender and the claw very long and slender; the number of setæ on the endopod proportionately small; exopod with the subbasal joint very broad. First pair of thoracic legs (fig. 1*h*) with second joint very broad and the other joints on the whole slender; sixth joint divided into two subjoints; seventh joint well developed, moderately slender; claw very long, slender; exopod with second joint very broad. (The other pairs of thoracic legs lost).

Male pleopods of first, second, third and fifth pairs are small plates (figs. 1*k*, 1*l*, 1*m*, 1*p*, 1*q*); fourth pair (figs. 1*i* and 1*n*) with the one-jointed endopod minute and the exopod very long, three-jointed and terminating in two short branches (fig. 1*o*). Uropods (fig. 1*r*) somewhat slender; exopod considerably longer than the endopod; both without spines but with setæ along both margins; otocyst well developed. Telson (fig. 1*r*) half as long as the uropods, very broad and even posteriorly very broad with a broad, moderately deep incision and the lobes turned obliquely outwards with the result, that the distal two-thirds of each lateral margin are considerably concave.

Remarks. — This genus is on the whole allied to *Mysis* sens. Sars 1877, but it differs strongly from all forms of the tribe Mysini by the shape of the telson and by having four pairs of the male pleopods plate-shaped; finally the maxillary palp and the gnathopods are unusually slender.

43. *Anisomysis laticauda* n. sp. Pl. XII, figs. 1*a*—1*s*.

Stat. 142. August 5/7. Anchorage off Laiwui, coast of Obi Major. 23 m. Hensen vertical net with electric light. 1 adult male.

Description. — Frontal plate (fig. 1*a*) somewhat broad, more than twice as long as broad, with the front end moderately broadly rounded. Eyes very large, dark brown; last joint of the eye-stalks increasing much in breadth from the base to the eye and somewhat less than twice as long as broad. Antennal squama reaching a little beyond the end of the antennular

peduncle, scarcely six times as long as broad (fig. 1 *c*); terminal joint somewhat less than twice as long as broad.

Male pleopods of first, second and third pairs are angular plates (figs. 1 *k*, 1 *l*, 1 *m*), decreasing in length from before backwards, and each with some marginal setæ; fifth pair (figs. 1 *p* and 1 *q*) about as large as the second, with 8 setæ. Fourth pair of pleopods reaching a little beyond the end of sixth abdominal segment (fig. 1 *i*); distal peduncular joint (fig. 1 *n*) not twice as long as broad; exopod with the first joint four times as long as, and second joint somewhat longer than, the third; the terminal branches (fig. 1 *o*) nearly equally long, a little more than half as long as the third joint; inner branch with a short basal part thickened, the remainder tapering to the end, and the proximal part of the distal half with setæ along both margins; outer branch two-jointed, with first joint slender and scarcely as long as the second, which is shaped about as a slender spine. Sixth abdominal segment not much longer than the fifth. Uropods (fig. 1 *r*) somewhat slender; exopod between seven and eight times as long as broad, tapering feebly towards the end and considerably longer than the endopod. Telson (fig. 1 *r*) as long as the sixth segment, half as long as the uropods and slightly more than half as long again as broad; to the description given above in the diagnosis of the genus may be added, that it is equally broad a little behind the base and at the end, while it is a good deal narrower somewhat beyond the middle; the posterior incision is rounded at the bottom, and the whole posterior margin is furnished with 8 pairs of spines — the postero-lateral pair not included — increasing conspicuously in length from the bottom of the incision to the outer angles, furthermore the larger spines taper scarcely or slightly from the base to rather near the end, which is rapidly acuminated; the distal half of each lateral margin of the telson with 5 normal spines increasing gradually in length backwards, but the fifth spine, which is found on the terminal angle of the lobe, is yet somewhat small.

Length of the single specimen, an adult male, 4 mm.

Genera of uncertain Position.

As already stated in a footnote on p. 13 I am unable to decide where the genus *Calyptomma* Tatt. (1909) ought to be placed; I am apt to think that it belongs to the tribe Erythropini, but as it has been established on immature and badly preserved specimens, some structural features are either unknown or imperfectly known.

The "Siboga" collection contains 3 immature male specimens of a most interesting form, on which I establish a new genus, *Lycomysis*, but as my knowledge is somewhat imperfect I prefer to describe it here without deciding its systematic position and rank before the discovery of the adult male, confining myself to a brief preliminary discussion in the "remarks" after the diagnosis of the genus.

Lycomysis n. gen.

Description (based on the immature male). — Carapace with the frontal plate rather short (Pl. XII, fig. 2 *a*), posteriorly considerably emarginate, shorter than the carapace. Eyes

very large; eye-stalks of very moderate length. Antennular peduncle with the third joint not shorter than the first. Antennal squama lanceolate, with setæ along both margins and a distal, transverse suture. Labrum (Pl. XI, fig. 3*a*) with a long, spiniform process from the transverse front margin. Left mandible (Pl. XI, figs. 3*b* and 3*c*) with the masticatory parts well developed: the incisive part not much produced with the margin dentate, the movable lobe very thick, three extremely broad setæ with setiform branches along their front margin, and the molar process thick. The palp is similar in both mandibles and extremely curious (figs. 3*b* and 3*d*); first joint is as usually extremely short; the second joint is long, with the distal two-thirds of its inner side somewhat expanded, strongly chitinised and quite flattened, the margin of this part as a whole straight with almost a score of oblong-triangular, very sharp and quite regular saw-teeth, the whole portion described being a most perfect saw acting against the saw of the opposite palp; third joint is short and narrow. Maxillulæ (Pl. XI, fig. 3*e*) with a produced, rounded protuberance on the front side of third joint (essentially as in *Stilomysis grandis* Goës, in which the protuberance is angular). Maxillæ (Pl. XI, fig. 3*f*) nearly as in *Stilomysis* Norm.; lobe of second joint with an extremely robust seta at the inner base of its distal part; terminal joint of the palp oval; exopod somewhat small. Maxillipeds (Pl. XII, figs. 2*c* and 2*d*) nearly as in *Hemimysis* G. O. S.; second joint very long, with a somewhat narrow, moderately long lobe; the two following joints with their inner margin convex but without any real lobe; claw very slender, setiform. Gnathopods (Pl. XII, fig. 2*e*) in the main as in *Mysis (Praunus) flexuosa* O. F. Müller, without distinct claw. First pair of thoracic legs (Pl. XIII, fig. 2*f*) moderately slender; sixth joint divided into three subjoints; seventh joint moderately small, slender; claw completely setiform.

Pleopods in the male immature specimens small, biramous, with the exopod increasing in length backwards, being on the anterior pairs shorter, on the fourth pair somewhat longer, than the exopod, on the fifth pair twice as long as the exopod, but very far from developed. Uropods (fig. 2*g*) somewhat slender, with the endopod only a little shorter than the exopod; both rami with setæ along both margins and without spines; otocyst very large. Telson (fig. 2*g*) long; the basal part short and decreasing considerably in breadth, with 2 pairs of short, lateral spines; the remainder widening slightly in the proximal third and then tapering feebly to the end which is moderately broad, very feebly convex and armed with 4 very long and extremely robust spines; the spines of the inner pair a little removed from each other and the interval with 2 very small, slender spines; a little more than the distal half of each lateral margin furnished with numerous, moderately small spines (fig. 2*h*), which seen from above (fig. 2*g*) are nearly hidden by a row of long and very robust spines originating from the upper surface of the telson near the margin.

Remarks. — The saws on the second joint of the mandibular palps are certainly an auxiliary instrument for dealing with the food. By these saws and the telson having two rows of spines at each side this genus is excellently distinguished from all other forms of the entire family. The mouth-appendages and thoracic legs are essentially as in the tribe Mysini, but the long process on the labrum is not known in any member of the tribe or even of the subfamily Mysinæ, while it is found in two other subfamilies, viz. Siriellinæ and Gastrosaccinæ; the shape

and furniture of the uropods and the antennal squama in *Lycomysis* are in the main as in the Mysinæ and especially as in the tribe Mysini, thus very distant from the features in the Siriellinæ and Gastrosaccinæ. Unfortunately the male pleopods are so imperfectly developed in my specimens, that they cannot afford any real help for deciding the systematic position of *Lycomysis*, yet it may be stated that they show that it cannot be referred to the Mysini, and that the exopod of the fifth pair being twice as long as the endopod is somewhat anomalous.

The facts enumerated prove that this most interesting new genus does not fit well in with any of the tribes of the subfamily Mysinæ, with the result that either a new tribe within this subfamily or a new subfamily is to be established for its reception; in the former case the diagnosis of the subfamily Mysinæ must be altered and enlarged. But it may be advisable to postpone the decision until adult specimens of both sexes, at least adult males, have been found and studied.

44. *Lycomysis spinicauda* n. sp. Pl. XI, figs. 3*a*—3*f*; Pl. XII, figs. 2*a*—2*h*.

Stat. 204—207. September 20—21. Buton-strait (Between lat. 4° 20′ S. and lat. 5° 7′.5 S., long. 122° 58′ E. and 122° 39′ E.). Plankton, surface. 3 immature males.

Description of the immature Male. — Frontal plate (fig. 2*a*) rather short and small, with the lateral margins a little concave, and anteriorly somewhat narrowly rounded. Eyes very large, black; distal joint of the eye-stalks moderately long, with the margins convex. Antennal squama a little more than five times as long as broad, reaching about to the end of the antennular peduncle; terminal joint somewhat longer than broad. Exopod of the uropods scarcely reaching the end of the terminal spines of the telson (fig. 2*g*), more than eight times as long as broad, with the end somewhat broad, transverse. To the main features of the telson pointed out in the description of the genus the following particulars may be added; it is two and a half times as long as broad at the base and nearly four times as long as broad at the middle; on the upper surface near each lateral margin 11 or 12 spines are found, rapidly increasing in length from the first very small to the fourth or fifth spine, and then preserving the same length to the last upper spine; the real lateral spines are between twice and thrice as many as the dorsal spines and can be counted only from below (fig. 2*h*); a similar moderately small spine is inserted below the very long spine on the postero-lateral angle; this outer pair of very long terminal spines taper gradually from near the base to the acute end, while those of the inner long pair begin to taper beyond the middle, and the end is even flattened and rounded. — Colour light brownish, without dark spots.

Length of one of the immature specimens 4.2 mm.

II. The Order EUPHAUSIACEA.

This order comprises in all 10 genera hitherto established, 6 of which are represented in the "Siboga" collection. In this paper I establish a single new genus, *Pseudeuphausia*, on a species already described in the "Challenger" Report as *Euphausia latifrons* G. O. Sars. As already stated, the "Siboga" captured 25 species, 7 of which are described here as new, while an eighth species, *Euphausia Sibogæ*, has been briefly characterized by me in a note on some pelagic Malacostraca secured at Amboina by M. Bedot and C. Pictet.

The investigation of the "Siboga" collection together with material from other Oceans has afforded some results which may be stated here as introductory remarks.

The antennulæ, especially the equipment of their peduncular joints with lobes, tubercles, keels or spines and the exact shape of such protuberances, ought to be studied more thoroughly than generally has been the case in the literature; in the large genera *Thysanopoda* M.-Edw. and *Euphausia* Dana even minor details are frequently much more important than generally believed. In all species of *Nematoscelis* G. O. Sars and *Stylocheiron* G. O. Sars the two distal joints of the antennular peduncles are much or very much thicker, and especially the third joint is besides conspicuously shorter, in the male than in the female; in *Stylocheiron* the flagella show interesting sexual and specific differences. In all genera the distal end of the first peduncular joint of each antennula possesses above on the inner side a short row of setæ which project forwards and terminate as hooks; by these hooks, which catch those from the antennula opposite, both antennulæ are coupled together.

The preanal process or spine on the lower side of sixth abdominal segment has been described by various authors as affording specific differences. But it seems to have been overlooked that this process in most cases shows sexual difference, being in most genera simple and often small in the male, while in the female it is most frequently broader, compressed, serrated or with two, three or several spines in a longitudinal row and decreasing in size backwards. The process may exhibit great difference in females belonging to different genera, but it seems to be as a rule without value for separating allied forms of the same genus.

On p. 1 I have already drawn attention to the extreme importance of the copulatory organs on the first pair of male pleopods. Here a description of these organs in the genera represented in the "Siboga" collection may be given. As the male of *Bentheuphausia* G. O. Sars is unknown to me, the genus *Thysanopoda* M.-Edw. is taken as the type, for which it is well qualified, as all the constituting elements of the organ are excellently developed.

The endopod (Pl. XII, fig. 3*a*) has the very short basal part slender as a kind of stalk (*s.*); then it becomes extremely expanded and is distally divided into three large lobes. The undivided broad part may be named the main plate (*m.*), the three lobes respectively the inner (*li.*), the median (*lm.*) and the setiferous lobe (*ls.*); from the base of the inner margin of the setiferous lobe or between that lobe and the median projects a much smaller, narrow auxiliary lobe (*lu.*). From a morphological standpoint the stalk, the outer part of the main plate and the setiferous lobe may be regarded as the endopod itself, from the inner part of which projects an enormous excrescence directed inwards and forwards (if seen in the natural position on the animal it is directed inwards and downwards) and divided by a deep incision into the inner and the median lobe, while the auxiliary lobe is a smaller protuberance beyond the large excrescence; especially the shape of the organ in *Stylocheiron* (several figures on Pl. XVI) seems to confirm this interpretation. In specimens preserved in spirit and probably also in living specimens the main plate with its lobes is rolled up from the inner side along the setiferous lobe, and for the examination of the composing elements with the processes it is necessary to unroll the whole organ and examine it from behind.

The inner lobe, which is proportionately short, bears in *Thysanopoda tricuspidata* M.-Edw. (Pl. XII, fig. 3*a*) and several other species of the genus three strongly chitinized, slender processes, all less or more movably articulated to the lobe: the spine-shaped process (p^1.) on the inner margin somewhat or a little from the end, the terminal process (p^2.) on the end, and the proximal process (p^3.) on the outer side and longer from the end than the spine-shaped process. The spine-shaped is always a slender, regular spine curved less or more inwards at or before the middle (it is wanting in *T. æqualis* H. J. H.; Pl. XII, fig. 4*b*); the two other processes are longer and much thicker than the spine-shaped, and most varying in shape in different species, sometimes even armed with several small, sharp teeth. The median lobe is always much longer than the inner and furnished on the posterior side at or beyond the middle of the inner margin with a less or more curved or distally quite hook-shaped lateral process (p^4.), and more distally at the same margin with a single smaller additional process (p^5.) or with two such processes. The auxiliary lobe has on the inner margin or on the front side a number of quite minute, extremely curved coupling hooks. The setiferous lobe is furnished on its rounded end and along a shorter or longer part of both margins with a number of plumose setæ, some of the most distal very long.

In *Euphausia* (Pls. XIII & XIV, many figures) the organ is in the main as in *Thysanopoda*, but in all species hitherto examined by me a spine-shaped process on the inner lobe and additional processes on the median lobe are totally wanting. The terminal process has generally a specially developed, transverse part, the foot (*f.* on Pl. XIV, figs. 1*b* and 4*e*) which sometimes is rather short, frequently long or very long, and from the outer end of the foot projects in the proximal direction a free, short or long part, the heel (*h.* on the figures just quoted), while the process itself projects in the opposite direction. The lateral process has sometimes at or beyond the middle a sharp tooth (Pl. XIV, fig. 3*c*) or even three teeth (Pl. XIV, fig. 6*d*). The distal part of the median lobe is frequently rather thin-skinned as in *Thysanopoda*, but sometimes (*E. pseudogibba* Ortm., Pl. XIV, figs. 4*d*—4*e*, and *E. paragibba*

n. sp., Pl. XIV, fig. 6*c*) it is more strongly chitinized and shaped about as a somewhat long, moderately thick, distally a little thickened and blunt process, while in *E. mutica* H. J. H. (Pl. XIV, figs. 1*b* and 1*c*) the same distal half reminds one of the head of a bird sitting on a short neck and with a thick, curved, acute, well chitinized beak. The setiferous lobe frequently only with setæ along the terminal margin.

In *Nematoscelis* G. O. Sars (Pl. XV, fig. 2*f* and some other figures) the inner lobe has all three processes, but the proximal process (p^3.) is at most feebly curved and inserted near the terminal one on the end of lobe, and the median lobe has no additional process. The processes are, on the whole, more simple than in the two preceding genera; the proximal and the lateral processes are straight or feebly curved, while the terminal process differs extremely in size and shape in various species.

In *Stylocheiron* (Pl. XVI, several figures) the inner lobe is united with the median nearly or quite to its end; the median lobe is shorter than in the preceding genera, with its lateral process inserted rather near or quite at the base of the inner margin, and in the latter case this process is situated close at the proximal process. The inner lobe possesses all three processes; the spine-shaped process is normal and inserted on the inner margin near its end; the two other processes are near each other and both proportionately short, frequently broad and distally flattened, even expanded and sometimes somewhat spoon-shaped. In this genus the processes are on the whole less developed and more similar in some species, therefore of minor value for separating otherwise allied forms. The auxiliary lobe is either small and placed on the lateral margin of the setiferous lobe or, in *S. carinatum* G. O. Sars (figs. 1*f* and 1*g*), quite rudimentary, but its place can be found, as two or three coupling hooks (*c.*) are still existing.

In *Pseudeuphausia latifrons* G. O. Sars (Pl. XV, figs. 1*c* and 1*d*) the whole organ is quite aberrant; it is even not easy to refer some of its elements to those of *Thysanopoda tricuspidata.* The inner lobe (*li.*) has three small, spiniform processes, the real spine-shaped process ($p.^1$) placed on the oblique terminal margin, while the terminal and proximal processes (p^2. and p^3.) are inserted near each other on the outer margin. (On a single organ I found two spine-shaped processes (fig. 1*d*) instead of one, but that is probably a casual anomaly). The median lobe has no real processes, but where the lateral process is normally found a very large, oblong, leaf-shaped plate (p^4.), probably homologous with the lateral process in other genera, is articulated. The setiferous lobe (*ls.*) is extremely narrow, without setæ, and originates near the base of the organ; an auxiliary lobe is wanting, but some coupling hooks (fig. 1*d*, *c*) are found on the margin of the main plate close before the insertion of the leaf-shaped plate.

Bentheuphausia G. O. Sars.

Only a single species is known.

1. *Bentheuphausia amblyops* G. O. Sars.

1883. *Thysanopoda* (?) *amblyops* G. O. Sars, Forh. Vid. Selsk. Christiania for 1883, N° 7, p. 23.
1885. *Bentheuphausia amblyops* G. O. Sars, Challenger Rep. Vol. XIII, p. 109, Pl. XIX; Woodcut, fig. 4.

Stat. 230. November 14. Lat. 3°58′ S., long. 128°30′ E. HENSEN vertical net, from 2000 m. to surface. 2 immature specimens.
Stat. 243. December 2. Lat. 4°30′.2 S., long. 129°25′ E. HENSEN vertical net, from 1000 m. to surface. 2 immature specimens.

Distribution. — The specimens of this bathypelagic form examined by SARS were taken in the tropical Atlantic and off Tristan da Cunha; a specimen taken South of Australia is mentioned by WILLEMOËS-SUHM. Later the species has been captured by the "Investigator" in the Bay of Bengal and by the Prince of Monaco several times in the Atlantic between lat. 27°43′ N. and 46°15′ N.

Thysanopoda H. Milne-Edw.

In his "Challenger" work SARS described 4 species, but since a good number have been established by ORTMANN, ILLIG and myself. In 1907 I examined the type-specimens of SARS preserved in the British Museum (Natural History), with the following results.

The type of *T. obtusifrons* G. O. Sars (from Stat. 285) shows that his figures 1 and 2 on Pl. XVIII are somewhat misleading, because the rostrum, when seen from the side, is not rounded off downwards, the front dorsal part of the carapace is adorned in a way different from that shown on his fig. 2 and the lobe from the first antennular joint has a somewhat other shape than seen on the same figure. In all these points his specimen agrees exactly with my description (in Bull. Mus. Océan. Monaco, N° 42, p. 20) of the same parts in *T. vulgaris* H. J. H. It may be mentioned that the front end of the carapace has no vertical, conical tooth in his type-specimen, while a minute tooth or at least a vestige of a tooth is present in most specimens of *T. vulgaris*, which is to be cancelled as a synonym to *T. obtusifrons* G. O. S., as the real characters used by me for separating the two forms are due to misleading details in the description and figures given by SARS. — Another "Challenger" specimen from the "Pacific" referred by SARS to *T. obtusifrons* is an immature *T. æqualis* H. J. H.

T. cristata G. O. Sars. — The type measures only 48 mm. in length from the end of the rostrum to the tip of the telson, and the lower margin of the carapace has on each side a conspicuous denticle near the posterior end. (In a future paper I will redescribe this species, as I have some specimens from the Pacific). *T. biproducta* Ortm. is certainly only an immature specimen, measuring 21 mm., of this species; I have compared a similar immature specimen of *T. cristata* from the Pacific with ORTMANN's description and figure.

T. microphthalma G. O. Sars. — SARS has mentioned two specimens, one taken by Mr. LUMHOLTZ and the other by the "Challenger"; the latter specimen, which must be considered as the real type, is preserved in the British Museum. This specimen I found stained with carmine and mounted on a glass-slide, thus in the state of preservation mentioned by SARS; in order to examine it from all sides I dissolved the balsam. The examination gave the result that the antennulæ strongly disagree with the description of SARS, and that the specimen, the "type", does not possess the denticle on the lower margin of the carapace described and figured in the "Challenger" Report. SARS says that the specimen taken by Mr. LUMHOLTZ enabled him "to make out the distinctive characters with greater precision", but unfortunately he did not

perceive that the two specimens belonged to different species, though he states that Mr. LUMHOLTZ' specimen possesses a "very small dentiform projection" from the hind margin of third abdominal segment, while the "caudal segments in the Challenger specimen would appear to be quite smooth above". The LUMHOLTZ' specimen is certainly *T. monacantha* Ortm., as this species agrees with SARS' description in the structure of the antennulæ and in the presence of a tooth on the lower margin of the carapace and the abdominal denticle mentioned. The "Challenger" specimen agrees exactly with my description (in Bull. Mus. Oc. Monaco, N⁰ 30 & 42) of *T. distinguenda* H. J. H., and the latter name must therefore be cancelled as a synonym.

According to my study of a vast material of this genus the following species have been established: *T. tricuspidata* M.-Edw., *T. cristata* G. O. S. (= *T. biproducta* Ortm.), *T. Agassizii* Ortm., *T. monacantha* Ortm. (= *T. ctenophora* Illig, and *T. lateralis* H. J. H. [1]), *T. obtusifrons* G. O. S. (= *T. vulgaris* H. J. H.), *T. æqualis* H. J. H., *T. pectinata* Ortm., *T. microphthalma* G. O. S. (= *T. distinguenda* H. J. H.), *T. acutifrons* Holt & Tatt., *T. cornuta* Illig (= *T. insignis* H. J. H. [2]), *T. egregia* H. J. H. and *T. megalops* Illig. The "Siboga" collection contains specimens of 3 of these 12 species, to which I add a new species, *T. orientalis*.

2. *Thysanopoda tricuspidata* H. M.-Edw. Pl. XII, figs. 3*a*—3*b*.

1830. *Thysanopode tricuspide* H. Milne-Edwards, Ann. Sc. Nat. T. XIX, p. 454, Pl. 19.
1837. *Thysanopoda tricuspida* H. Milne-Edwards, Hist. Nat. Crust. T. II, p. 466, Pl. 26, figs. 1—6.
1885. *Thysanopoda tricuspidata* G. O. Sars, Challenger Rep. Vol. XIII, p. 98, Pl. XVII, and p. 165, Pl. XXXI, figs. 1—22 (larval stages).

Stat. 37. March 30/31. Sailus ketjil, Paternoster-islands. 37 m. Surface. 4 specimens: 2 larvæ and 2 very young.
Stat. 40. April 2. Anchorage off Pulu Kawassang, Paternoster-islands. 12 m. Townet. 1 larva.
Stat. 66. May 7/8. Bank between islands of Bahuluwang and Tambolungan, south of Saleyer. 8—10 m. Plankton. 23 specimens, in various stages from larger larvæ to half-grown individuals.
Stat. 75. June 8. Lat. 4° 57′.4 S., long. 119° 2′.8 E. 18 m. HENSEN vertical net, from 11 m. to surface, electric light in net. 3 larvæ.
Stat. 96. June 27. South-east side of Pearl-bank, Sulu-Archipelago. 15 m. Surface. 1 very young specimen.
Stat. 99. June 28/29/30. Lat. 6° 7′.5 N., long. 120° 26′ E. Anchorage off North-Ubian. 15—23 m. Surface. 1 very young specimen.
Stat. 106. July 4. Anchorage off Kapul-island, Sulu-Archipelago. 13 m. Townet. 4 specimens, from very small to half-grown.
Stat. 117ª. July 12. Lat. 1° 15′ N., long. 123° 37′ E. Plankton, townet. 3 larvæ.
Stat. 125. July 18/19. Anchorage off Sawan, Siau-island. 27 m. Townet. 1 larva.
Stat. 128. July 22. Lat. 4° 27′ N., long. 125° 25′.7 E. 1645 m. HENSEN vertical net, from 700 m. to surface. 1 very young specimen.
Stat. 129. July 22/23. Anchorage off Kawio- and Kamboling-islands, Karkaralong-group. 23—31 m. Townet. 4 larvæ.
Stat. 132. July 25. Lat. 5° 56′.7 N., 126° 25′ E. 3302 m. Plankton. 15 specimens, most of them mere larvæ, the others very young.

1) I had overlooked the pair of tiny denticles on the lower margin of the scutum, and ORTMANN's description of the scutum and the antennular armature in his *T. monacantha* is rather poor.

2) ILLIG's paper containing the description of his *T. cornuta* was published two or three days before the Monaco-paper, in which I established *T. insignis*.

Stat. 136. July 29—August 3. Ternate anchorage. 23 m. Surface. 17 specimens, larvæ or very young individuals.
Stat. 138. August 3. Anchorage on the east coast of Kajoa-island. 66 m. Surface. 1 very young specimen.
Stat. 141. August 5. Lat. 1° 0′.4 S., long. 127° 25′.3 E. 1950 m. HENSEN vertical net, from 1500 m. to surface. 6 specimens, 1 of which is adult, the others younger or very young.
Stat. 142. August 5/7. Anchorage off Laiwui, coast of Obi Major. 23 m. Plankton. 1 very young specimen.
Stat. 143. August 7. Lat. 1° 4′.5 S., long. 127° 52′.6 E. 1454 m. HENSEN vertical net, from 1000 m. to surface. 4 specimens, less than half-grown.
Stat. 144. August 7/9. Anchorage North of Salomakiëe-(Damar)-island. 45 m. Plankton. 10 specimens, young or very young.
Stat. 146. August 9. Lat. 0° 36′ S., long. 128° 32′.7 E. 512 m. Surface. 1 very young specimen.
Stat. 148. August 10. Lat. 0° 17′.6 S., long. 129° 14′.5 E. 1855 m. HENSEN vertical net, from 1000 m. to surface. 7 specimens, from less than half-grown to nearly full-grown.
Stat. 157. August 15/16. Lat. 0° 32′.9 S., long. 130° 14′.6 E. 45 m. Plankton. 6 specimens: larvæ or very young.
Stat. 165. August 20/22. Anchorage on North-east side of Daram-island (False Pisangs), East coast of Misool. 49 m. 8 specimens: larvæ and very young individuals.
Stat. 168. August 22/23. Anchorage North of Sabuda-island. 63 m. Surface. 5 larvæ.
Stat. 184. September 11/12. Anchorage off Kampong Kelang, South coast of Manipa-island. 36 m. Surface. 2 specimens: 1 larva and 1 very young individual.
Stat. 185. September 12. Lat. 3° 20′ S., long. 127° 22.9 E. HENSEN vertical net, from 1536 m. to surface. 11 specimens, from quite young to somewhat more than half-grown.
Stat. 189ª. September 12. Lat. 2° 22′ S., long. 126° 46′ E. Townet. 6 larvæ.
Stat. 194. September 15. Lat. 1° 53′.5 S., long. 126° 39′ E. 1504 m. Townet. 1 larva.
Stats. 194—7. September 15. 1° 53′.5 S. — 1° 45′.3 S., 126° 39′ E. — 127° 8′.3 E. Plankton. 1 very young specimen.
Stat. 203. September 20. Lat. 3° 32′.5 S., long. 124° 15′.5 E. HENSEN vertical net, from 1500 m. to surface. 7 specimens: 6 not full-grown and 1 larva.
Stats. 204—7. September 20—21. Buton-strait. Surface. 2 larvæ.
Stat. 220. November 1/3. Anchorage off Pasir Pandjang, West coast of Binongka. 278 m. Surface. 5 specimens: 4 very young and 1 larva.
Stat. 223. November 6. Lat. 5° 44.7 S., 126° 27′.3 E. 4391 m. Surface. 2 larvæ.
Stat. 225. November 8. 5700 M. N. 279° E. from South point of South-Lucipara-island. 894 m. Surface. 22 young specimens.
Stat. 243. December 2. Lat. 4° 30′.2 S., long. 129° 25′ E. HENSEN vertical net, from 1000 m. to surface. 1 adult specimen.
Stat. 276. January 9. Lat. 6° 47′.5 S., long. 128° 40′.5 E. HENSEN vertical net, from 750 m. to surface. 3 very young specimens.
Stat. 282. January 15/17. Lat. 8° 25′.2 S., long. 127° 18′.4 E. Anchorage between Nusa Besi and the N.E.-point of Timor. 27—54 m. Surface. 2 larvæ.
Stat. 315. February 17/18. Anchorage East of Sailus Besar, Paternoster-islands. 36 m. Plankton. 2 larvæ.

SARS has worked out an excellent description of this very characteristic species, but the copulatory organs ought to be dealt with here. The main plate is short and the lobes long (fig. 3*a*). The inner lobe (*li.*) with all three processes well developed; the spine-shaped process (p^1.) is strongly curved and inserted somewhat before the end of the lobe; the terminal process (p^2.) is moderately long, directed upwards along the outer and partly the posterior side of the lobe, a little curved, with the end somewhat expanded and shaped as a small, triangular plate; the proximal process (p^3.) is inserted about at the middle of the outer margin of the lobe, moderately

long, with the proximal third directed outwards, then bending somewhat suddenly forwards, distally flattened with the outer margin straight, the inner convex, crenulated, and the end acute but not acuminated. Median lobe (*lm.*) very long, considerably overreaching the setiferous lobe, distally narrower with the terminal part lamellar and rounded; the lateral process (p^4.) moderately long, slender, considerably curved, distally blunt and situated much beyond the middle of the inner margin of the lobe; the additional process (p^5.) small, somewhat slender, strongly curved, far from reaching the end of the lobe. The setiferous lobe (*ls.*) long, narrow, with not fully two-thirds of the outer margin furnished with setæ; auxiliary lobe (*lu.*) of very moderate size. — The direction and shape of the terminal process and the shape of the proximal process are extremely characteristic of this species.

Remarks. — The long list of localities shows that this species is very common in the Indian Archipelago, but the large majority of specimens are either very young or larvæ, some few are about half-grown and only two are really adult. The list shows besides that the species propogates all the year round.

Distribution. — According to the literature and my material from various sources this fine species is widely distributed in the warmer area of the Atlantic, the Indian Ocean and the Pacific. In vain I have looked for differences in the structure of the copulatory organs in specimens from these Oceans.

3. *Thysanopoda æqualis* H. J. H. Pl. XII, figs. 4*a*—4*c*; Pl. XIII, fig. 1*a*.

1905. *Thysanopoda æqualis* H. J. Hansen, Bull. Mus. Océan. Monaco, N° 42, p. 19.

Stat. 118. July 13. Lat. 1° 38′ N., long. 124° 28′.2 E. HENSEN vertical net, from 900 m. to surface. 1 small adult male and 1 very young specimen.
Stat. 128. July 22. Lat. 4° 27′ N., long. 125° 25′.7 E. 1645 m. HENSEN vertical net, from 700 m. to surface. 1 immature specimen.
Stat. 148. August 10. Lat. 0° 17′.6 S., long. 129° 14′.5 E. 1855 m. HENSEN vertical net, from 1000 m. to surface. 1 adult male.

As I have given a description of the essential features of this species in the paper quoted, it may be sufficient here to refer to my drawings of the anterior part of the animal from above (Pl. XII, fig. 4*a*) and from the side (Pl. XIII, fig. 1*a*), and to add a description with figures of the copulatory organs. The left organs of both males have been examined, the male from Stat. 148, measuring 17 mm., is about middle-sized, while the male from Stat. 118 is extremely small, measuring only 13.5 mm.; the organs of these two specimens show some unimportant differences in the shape of the distal part of the processes on the inner lobe, while the differences shown by the figures between the processes of the median lobe are due to the casual direction of these processes, as in fig. 4*b* they are seen from the side, in fig. 4*c* less or more completely from their back. — The main plate is somewhat long in proportion to the lobes. The inner lobe without spine-shaped process; the terminal process is somewhat long, almost gradually tapering, acute and somewhat sinuate, being rather feebly bent two times in opposite directions; the proximal process is longer than the terminal, but yet not reaching its end, with nearly the basal third strong, then much bent and considerably tapering, somewhat

behind its acute end bent conspicuously outwards. The median lobe with nearly its basal half broad, its distal half much more slender and terminating in a less or more produced triangle with the end somewhat blunt; the lateral process, which is inserted at the end of the broad part, is a little or scarcely shorter than the distal part, thick at the base, then nearly suddenly much narrowed and towards the acute end much curved; the additional process is long and strong, much overreaching the lobe, much curved, acute. The setiferous lobe slightly overreaching the median, broad, with the protuberance very developed, and the outer margin with setæ to near the stalk. It may be added that the organs of specimens from the Atlantic and the Pacific agree well with my figures, and that the absence of the spine-shaped process is at least a rare feature within the genus *Thysanopoda*.

Young Specimens. — In specimens less than half-grown the rostral plate is longer, forming a broad triangle with the sides convex and the acute end slightly produced, while the lamella from first antennular joint is somewhat smaller and has not yet fully attained it final characteristic shape.

Distribution. — The species is common in the eastern part of the Atlantic from lat. 36° 17′ N. to 28° N. (H. J. Hansen) and is known from the Pacific (see above p. 81).

4. *Thysanopoda orientalis* n. sp. Pl. XIII, figs. 2*a*—2*i*.

Stat. 128. July 22. Lat. 4° 27′ N., long. 125° 25′.7 E. 1645 m. Hensen vertical net, from 700 m. to surface. 1 very young specimen.
Stat. 143. August 7. Lat. 1° 4′.5 S., long. 127° 52′.6 E. 1454 m. Hensen vertical net, from 1000 m. to surface. 2 very small specimens and 2 larvæ.
Stat. 185. September 12. Lat. 3° 20′ S., long. 127° 22′.9 E. Manipa-strait. Hensen vertical net, from 1536 m. to surface. 1 immature male.
Stat. 203. September 19. Lat. 3° 32′.5 S., long. 124° 15′.5 E. Hensen vertical net, from 1500 m. to surface. 1 very large female.

Description. — This species is not only similar to the two closely allied species *T. acutifrons* Holt & Tatt. and *T. microphthalma* G. O. Sars (= *T. distinguenda* H. J. H.), but even intermediate between them as to size and antennular lobe, while the copulatory organs show that the three species are well founded. (In Bull. Mus. Océan. Monaco, N° 42, I described *T. acutifrons* and *T. distinguenda*, and later Holt & Tattersalt dealt with them again and added good figures; the reader is referred to both papers). In *T. orientalis* the body is larger and especially the cephalothorax is conspicuously

T. acutifrons Monaco Stat. 1639. — *T. microphthalma* G. O. S. = *T. distinguenda* H. J. H. Monaco Stat. 1749. — *T. orientalis* n. sp. Agassiz Stat. 4721.

more clumsy than in *T. microphthalma* and more similar to *T. acutifrons*, but not quite as large, as the latter measures 35—43 mm., while the largest specimen of *T. orientalis* seen by me (the female from "Siboga") is 38 mm. and an adult male (from the Pacific) only 23 mm. The front end of the carapace (figs. 2*a*—2*b*) is shaped quite as in *T. acutifrons*; no denticle on the lower margin near the posterior end. Eyes dark brown or brownish black as in *T. microphthalma*. The lobe from the first antennular joint (fig. 2*c*) nearly as in *T. acutifrons*, but its end is, seen from the side, distinctly a little more produced, acuminate, but not quite as much as in *T. microphthalma*. The antennal squama reaches beyond the end of the upper and inner produced part of second antennular joint as in *T. acutifrons*. The terga of fourth and fifth abdominal segments very slightly acuminate at the middle of the posterior margin as in *T. microphthalma*.

As already stated, the copulatory organs of the three species show excellent specific differences. In all three forms the median lobe is long and terminates in an acute, small lobe, its lateral process is long and distally curved, while the additional process is short, oblong, very thick, but otherwise showing some differences; furthermore the inner lobe possesses the spine-shaped process, while the proximal process is thick at the base, moderately slender from the basal portion to the acute apex, and with some teeth on the outer side near that end. But the terminal process and the length and curvature of the proximal process show excellent specific differences.

In *T. acutifrons* the terminal process is somewhat short, with its distal fourth tapering and slightly curved with the end acute; the proximal process is more than twice as long as the terminal, and its distal three-fourths very moderately curved. In *T. microphthalma* the terminal process is rather long, increasing somewhat in breadth at the end, which is turned backwards in a most peculiar way, showing a transverse row of saw-teeth just behind the flatly arched terminal surface; the proximal process is only a little longer than the terminal, not reaching its end and very moderately curved. In *T. orientalis* the terminal process is somewhat long and strong, tapering feebly to the broadly rounded, unarmed end; the proximal process is very long, but not quite twice as long as the terminal, bent strongly inwards at the end of the proximal fifth, with the distal four-fifths very, nearly semicircularly, curved.

Very young Specimens. — Two such specimens (from Stat. 143) measure about 10 mm. in length. The carapace has a small but very conspicuous denticle on the lower margin a little in front of the posterior end; anteriorly (fig. 2*d*) it is more produced than in the adults, the frontal plate forming a triangle a good deal broader than long, with the lateral margins straight and the apex a little produced, acute; the dorsal carina is well developed. The eyes (fig. 2*d*) are very light brownish, considerably higher than broad, divided into two areas by an impression a little above the middle. The lobe from first antennular joint in the main as in the adult. The distal part of the telson as in the adults, the pleopods setiferous, but the posterior pairs of thoracic legs being lost it is impossible to state anything as to their degree of development.

Larvæ. — One of the larvæ from Stat. 143 measures 5.7 mm., and being sure that it belongs to this species I give five figures (figs. 2*e*—2*i*). The carapace has a very long

spine-shaped process on the lower margin at its posterior end (fig. 2*f*); the dorsal carina is an almost oblong-triangular plate at the middle of the median line; the frontal plate (fig. 2*e*) is considerably produced, triangular, with the end acuminate and very acute. The eyes with the upper section moderately developed, while the lower part is still in a rudimentary state both as to cornea and inner visual elements. The first antennular joint (figs. 2*e* and 2*g*) with a long outer process reaching considerably beyond the end of the next joint and bearing on the inner margin a large number of spines very varying in length; the inner flagellum still undivided, naked, and considerably shorter than the peduncle. The antennal rami with some setæ at the end; the exopod somewhat shorter than the endopod and not yet developed as a squama. Fig. 2*f* shows that the maxillipeds (*mxp.*) and third pair of thoracic legs are nearly rudimentary, while the two anterior pairs of legs have the endopod much more developed and divided into joints though still without setæ. All five pairs of pleopods with setæ on both rami. Sixth abdominal segment (fig. 2*h*) very long, almost longer than the sum of the two preceding segments. Fig. 2*h* shows the uropods and the telson, and fig. 2*i* the distal part of the same telson, with the spines characteristic of this stage of the present species; a special description may be superfluous. — The other larva from Stat. 143 is a little smaller, with some of the appendages a little less developed, but not showing anything of interest.

5. *Thysanopoda Agassizii* Ortm. Pl. XIII, figs. 3*a*—3*g*.

1894. *Thysanopoda Agassizii* Ortmann, Bull. Mus. Comp. Zool. Vol. XXV, N° 8, p. 99, Plate, figs. 1—2.

Stat. 66. May 7/8. Bank between islands of Bahuluwang and Tambolungan, south of Saleyer. 8—10 m. Plankton. 1 very young specimen and 1 larva.
Stat. 203. September 19. Lat. 3° 32'.5 S., long. 124° 15'.5 E. HENSEN vertical net, from 1500 m. to surface. 3 subadult specimens.
Stat. 243. December 2. Lat. 4° 30'.2 S., long. 129° 25' E. HENSEN vertical net, from 1000 m. to surface. 1 immature specimen.
Stat. 276. January 9. Lat. 6° 47.5 S., long. 128° 40'.5 E. HENSEN vertical net, from 750 m. to surface. 7 larvæ.

Description of subadult Specimens (figs. 3*a*—3*b*). — The frontal plate is moderately produced, triangular, with the sides a little sinuated, terminating in a short, laterally compressed rostral process directed forwards and a little upwards. The upper surface of the carapace is carinated along more than the anterior third, and this carina is somewhat behind its anterior half suddenly a little higher, showing a less or more angular protuberance; less than the front half of the carina has along each side a narrow excavation limited outwards by a keel, and these two submedian keels are united with the median carina slightly behind the rostral process. Along the lower lateral margin of the carapace runs an impressed furrow anteriorly a little above, posteriorly gradually considerably more above, the lower margin; the latter has a small denticle a little before its posterior end; the sides of the carapace have no vertical or oblique grooves. The eyes of very moderate size, black. The first peduncular joint of the antennulæ has from its inner distal part of the upper side a large lobe, which at the base is highly raised, somewhat more than half as broad as the end of the joint and furnished

with numerous setæ; the lobe is produced forwards and outwards, constituting a thick, oblique-triangular plate directed forwards and outwards, and its end is produced into a spine-shaped process going essentially forwards but not reaching the end of second joint near its outer angle; from the base of this process to the inner base of the lobe the surface bears a very oblique row of 10—12 slender, long spines, the outer of which is directed forwards, the inner besides a little inwards. Second joint of the peduncle distally along the inner three-fourths of its breadth produced into a flat, moderately short lobe, the outer terminal angle of which bears a spine-shaped process directed forwards and a little outwards and reaching the middle of the next joint; third joint towards the end of the inner part of its upper surface with a high keel. The antennal squama is broad and reaches about the middle of third antennular joint. Third abdominal segment dorsally produced into a moderately short, spine-shaped, thin process; fourth and fifth segments dorsally either with a feebly produced, sharp angle or with a very short, acute tooth at the middle of the hind margin. Telson with 10—12 pairs of small dorsal spines; uropods with the exopod just reaching the end of telson and a little longer than the endopod.

Length about 23.5—25 mm.; adult specimens unknown.

Very young Specimens. — A specimen (from Stat. 66), which measures 9.5 mm., differs in several particulars from subadult specimens. The frontal plate (fig. 3*c*) has still preserved much of the shape in the larva (comp. fig. 3*d*), being distinctly longer and beyond the middle considerably broader than in the subadult, with the distal part of the lateral margins considerably convex and the rostrum small, triangular, shorter than in the larva, acute, not compressed; the upper surface of the frontal plate is deeply concave longitudinally, with the carina from the carapace terminating somewhat behind the rostrum. The carapace with the lateral linear furrow and the marginal denticle well developed, while the anterior submedian dorsal keels are wanting. The eyes (fig. 3*c*) are proportionately very large, black, semiglobular. The antennular peduncles have the lobe from first joint somewhat developed, but its distal spiniform process is still rather short and the oblique dorsal row of spines not developed; the lobe from second peduncular joint is not developed, but its terminal process is conspicuous, and the upper keel on third joint is high. The dorsal spine on third abdominal segment is conspicuous but short, while no tooth is found on the two next segments. In other respects, as uropods and telson, the specimen is essentially as the subadult.

Larvæ. — 4 of the larvæ from Stat. 276 are in the same stage of development (the others are a little more developed); one of these smaller specimens, of which four figures (figs. 3*d*—3*g*) are given, measures 4.7 mm. in length. The frontal plate (fig. 3*d*) is long, moderately broad to somewhat before the end, then it tapers rapidly and terminates in an acuminate, short rostrum; its major posterior part is deeply concave longitudinally, and its anterior part is bent somewhat downwards, while the rostrum itself is horizontal or turned slightly upwards; the carina from the carapace reaches scarcely the middle of the frontal plate, and the more protuberant posterior part of this carina is a little higher and with the anterior margin more vertical than in the subadult specimens. The carapace without the sublateral furrow, but with the marginal denticle very conspicuous though not large. The eyes are extremely large, semiglobular, dark greyish or nearly black in the central part. The antennulæ only half developed (fig. 3*d*); the

first joint with the outer distal process longer than the following joint and on its inner margin furnished with 5 or 6 somewhat long spines and between these many very small spines (fig. 3*e*); the flagella even shorter than third peduncular joint. The antennæ with the inner flagellum a little longer than the outer; both flagella unjointed with a few terminal setæ. Maxillipeds with the endopod only as long as the exopod, two-jointed; first pair of thoracic legs only as long as the maxillipeds, with the endopod divided into feebly differentiated joints; second pair of thoracic legs only half as long as the first, but with a trilobed branchia; third pair seemingly consisting of a trilobed branchia, and fourth pair of a quite minute branchia. The two anterior pairs of pleopods with both rami present and terminating in setæ, the three posterior pairs without endopod and with the exopod naked. Fig. 3*f* shows sixth abdominal segment with uropods and telson, while fig. 3*g* represents the distal half of the telson; these two figures show all details as to relative length, shape and spines so clearly that a description may be omitted; yet the extreme difference between the armature of the distal part of the telson in this form and in the larva of *T. orientalis* (figs. 2*h*—2*i*) may be pointed out, especially as the larvæ of these two species do not differ much from each other as to the stage of development of antennæ and maxillipeds, while the antennulæ, the anterior thoracic legs and the posterior pleopods are conspicuously more developed in the larva of *T. orientalis* than in that of *T. Agassizii*. — The 3 larvæ in the following stage are about 5.2 mm. long; they have the antennulæ, the anterior thoracic legs and the pleopods developed about as in the above-mentioned larva of *T. orientalis*, while the apical part of telson has only a single pair (not as in the previous stage (fig. 3*g*) two pairs) of minute spines; in other respects these larvæ agree with the former stage.

Remarks. — Having at hand a large number of this species from the Pacific, I am quite sure that it is *T. Agassizii* Ortm. But I am unable to decide with certainty if it is identical with *T. monacantha* Ortm. (= *T. lateralis* H. J. H.), and I suppose that only an examination of adult males of both forms can settle the question. But the adult male of *T. Agassizii* is unknown to me, and of *T. monacantha* from the Atlantic I have only a single female specimen; this differs from *T. Agassizii* in having the rostral process somewhat longer and distally distinctly curved, but whether that feature is a specific character it is impossible to decide. Until further evidence it may be advisable to keep the name *T. Agassizii* for the Indo-Pacific form.

Euphausia Dana.

This genus comprises a large number of species established by various authors, but I learnt from the investigation of the copulatory organs of a large number of forms that some of the species are far from well defined; besides I have from various sources several hitherto unknown species. It may be convenient to state here some of the results of my studies during the last four years.

Euphausia latifrons G. O. Sars differs in some features so much from all other species that later in the present treatise I establish a new genus, *Pseudeuphausia*, for its reception.

Euphausia Schotti Ortmann (Decapoden und Schizopoden, in Ergebn. Plankton-Exped.,

B. II, G. b., p. 13, Taf. VII, Fig. 8) can not be an adult or subadult form but must be a large larva; according to ORTMANN's description and figures the shape of the antennulæ with their extremely short flagellum and the very long spine from the outer angle of their basal joint is purely larval, and the same is certainly the case with the long dorsal spine from the hind margin of the carapace; the fifth pair of thoracic legs are short and the telson is somewhat longer than the uropods, but both these features are found in advanced larvæ or very young specimens. Judging from the shape of the frontal plate and rostrum I suppose that the animal may be the larva of a species of *Thysanopoda*.

According to my examination in the British Museum of the type of *Euphausia lanei* Holt & Tatt. it is a less than half-grown specimen of *Meganyctiphanes norvegica* M. Sars; the lobe or leaflet on the first antennular joint had been broken off which made the very small specimen somewhat difficult to recognize. The name *E. lanei* is therefore to be cancelled.

Thysanopoda Krohnii Brandt, 1851 (Krebse, in Middendorff's Sibirische Reise, Bd II, I, p. 127) from the Mediterranean is quite insufficiently described and has been overlooked by all authors. Guessing that it might be identical with *Euphausia Mülleri* Claus I asked Prof. A. BIRULA to give me a description with figure of the lobe from first antennular joint, and he most kindly sent both, which proved beyond doubt that my supposition was correct, as the lobe mentioned is extremely characteristic and quite different from those met with in any other species of *Euphausia* known from the Mediterranean or the Atlantic; consequently this most common European species is to be named *E. Krohnii* Brandt.

In Bull. Mus. Océan. Monaco, N° 42 (1905) I proved that among the four species of *Euphausia* established by Dana only *E. superba* is recognisable and valid, while the others, *E. pellucida*, *E. splendens* and *E. gracilis*, are to be cancelled, as the types are lost and the descriptions and figures quite insufficient for recognition of the forms. Furthermore I showed that *E. pellucida* Dana sens. Sars is collective; I described four species with two pairs of lateral denticles on the carapace, viz. *E. Mülleri* Claus, *E. recurva* H. J. H., *E. mutica* H. J. H., and *E. brevis* H. J. H., while a fifth species, *E. diomedeæ* Ortm., was mentioned with some doubt, as I had no specimen agreeing with his figure. The study of a vast material from the Pacific and the "Siboga" expedition showed, that *E. mutica* as established by me in 1905 still comprises two allied but well separated species, one of which can keep the name *E. mutica*, while the other is *E. diomedeæ* Ortm., as the structure of the antennulæ and the male copulatory organs is quite similar in specimens possessing the character, viz. a highly expanded frontal plate, on which ORTMANN established his species, and in specimens with that feature not developed, and as specimens from the Pacific vary much in the size of the frontal plate and rostrum.

In 1894 ORTMANN founded a species, *Euphausia pseudogibba*, as different from *E. gibba* G. O. Sars established on specimens from the Pacific. In the Monaco-paper mentioned I cancelled ORTMANN's species, as the characters pointed out by him seemed to me to be invalid. But the study of the copulatory organs of the specimens similar to *E. gibba* captured by the "Siboga" together with selected specimens from the Atlantic and the Pacific gave the result, that now I know four species, the females of which are so closely allied that frequently they are difficult to separate with absolute certainty, while the copulatory organs of the males show extremely

sharp and even strong specific differences, proving that the four species are quite valid; in reality the males are very easy to determine by looking on the organs named with the aid of a dissecting microscope magnifying 30 times. I have not yet examined my entire vast material of the *gibba*-group from the Atlantic and the Pacific, but the "Siboga" collection contains three species, two of which I know from the North Atlantic, while of the real *E. gibba* G. O. Sars I have only seen specimens from the Pacific.

At present the genus *Euphausia* comprises the following 19 valid species hitherto established: *E. Krohnii* Brandt (= *E. Mülleri* Claus + *E. bidentata* G. O. Sars), *E. diomedeæ* Ortm., *E. mutica* H. J. H., *E. recurva* H. J. H., *E. brevis* H. J. H., *E. superba* Dana, G. O. Sars (= *E. Murrayi* G. O. Sars + *E. antarctica* G. O. Sars + *E. glacialis* Hodgson + *E. australis* Hodgson), *E. similis* G. O. Sars, *E. crystallorophias* Holt & Tatt., *E. lucens* H. J. H. (= *E. splendens* Dana sens. G. O. Sars), *E. tenera* H. J. H. (= *E. gracilis* Dana sens. Sars), *E. Vallentini* Stebb., *E. gibba* G. O. Sars, *E. pseudogibba* Ortm., *E. gibboides* Ortm., *E. Sibogæ* H. J. H., *E. mucronata* G. O. Sars, *E. triacantha* Holt & Tatt., *E. spinifera* G. O. Sars and *E. longirostris* H. J. H. The "Siboga" collection contains 8 species, 2 of which are new.

a. Species with two pairs of lateral denticles on the carapace.

6. *Euphausia diomedeæ* Ortm. Pl. XIII, figs. 4*a*—4*e*.

1894. *Euphausia diomedeæ* Ortmann, Bull. Mus. Comp. Zool. Vol. XXV, N° 8, p. 102, Plate, fig. 3.
1905. *Euphausia mutica* H. J. Hansen, Bull. Mus. Océan. Monaco, N° 42, p. 14 (partim).

Stat. 66. May 7/8. Bank between islands of Bahuluwang and Tambolungan, south of Saleyer. 8—10 m. Plankton. Very large number of specimens, nearly all small or very small or larvæ.
Stat. 75. June 8. Lat. 4° 57′.4 S., long. 119° 2′.8 E. 18 m. HENSEN vertical net, with electric light, from 11 m. to surface. About 20 specimens, in all ages.
Stat. 99. June 28/29/30. Lat. 6° 7′.5 N., long. 120° 26′ E. Anchorage off North-Ubian. 16—23 m. Surface. 1 specimen.
Stat. 118. July 13. Lat. 1° 38′ N., long. 124° 28′.2 E. HENSEN vertical net, from 900 m. to surface. 14 specimens, in all ages.
Stat. 141. August 5. Lat. 1° 0′.4 S., long. 127° 25′.3 E. 1950 m. HENSEN vertical net, from 1500 m. to surface. Very large number of specimens, in all ages.
Stat. 143. August 7. Lat. 1° 4′.5 S., long. 127° 52′.6 E. 1454 m. HENSEN vertical net, from 1000 m. to surface. Many specimens, of various size.
Stat. 144. August 7/9. Anchorage North of Salomakiëe-(Damar-)island. 45 m. Townet. 4 specimens.
Stat. 146. August 9. Lat. 0° 36′ S., long. 128° 32′.7 E. 512 m. Surface. 26 somewhat small specimens.
Stat. 148. August 10. Lat. 0° 17′.6 S., long. 129° 14′.5 E. 1855 m. HENSEN vertical net, from 1000 m. to surface. Many specimens, more than half-grown to adult.
Stat. 177ª. September 1. Lat. 2° 30′ S., long. 129° 28′ E. Townet. Many specimens, the majority very small.
Stat. 185. September 12. Lat. 3° 20′ S., long. 127° 22′.9 E. Manipa-strait. HENSEN vertical net, from 1536 m. to surface. Large number of specimens, of every size.
Stat. 189ª. September 12. Lat. 2° 22′ S., long. 126° 46′ E. Townet. Large number of specimens, of every size (many larvæ).
Stat. 203. September 19. Lat. 3° 32′.5 S., long. 124° 15′.5 E. HENSEN vertical net, from 1500 m. to surface. Large number of specimens, of every size.

Stat. 220. November 1/3. Anchorage off Pasir Pandjang, west coast of Binongka. Surface. 1 adult specimen.
Stat. 225. November 8. 5700 M. N. 279° E. from Southpoint of South-Lucipara-island. 894 m. Horizontal cylinder. Very large number of specimens, of every size.
Stat. 230. November 14. Lat. 3° 58′ S., long. 128° 20′ E. HENSEN vertical net, from 2000 m. to surface. 1 specimen, nearly adult.
Stat. 243. December 2. Lat. 4° 30′.2 S., long. 129° 25′ E. HENSEN vertical net, from 1000 m. to surface. 2 adult and 2 half-grown specimens.
Stat. 245. December 3. Lat. 4° 16′.5 S., long. 130° 15′.8 E. 4956 m. Surface. 2 nearly adult specimens.
Stat. 252. December 8/9. West side of Taam-island. 9—36 m. Surface. 1 specimen, about adult.
Stat. 282. January 15/17. Lat. 8° 25′.2 S., long. 127° 18′.4 E. 27—54 m. Plankton. 1 specimen, nearly adult.

Description. — The frontal plate is a very short triangle terminating in a slender rostrum (fig. 4*a*) about as long as the firmly chitinized part of the eye-stalks (as to the curious anomaly of these parts found in some specimens from the Pacific see below). Lobe from first antennular joint (fig. 4*b*) similar in both sexes, produced into a leaflet occupying somewhat more than the inner half of the upper breadth at the end of the joint, directed somewhat forwards and much upwards, distally deeply cleft by an extremely broad, obliquely triangular incision and with each lateral angle produced into a spiniform process directed essentially forwards and besides somewhat or considerably outwards. Second antennular joint distally near each angle armed on the upper surface with a conspicuous protuberance, the outer blunt, the inner triangular, subacute. Anal process similar in both sexes, with a couple of minute spinules projecting from a broad basal part behind a moderately long and curved spine.

The copulatory organs (figs. 4*c*—4*e*) have all lobes well developed. The terminal process is somewhat long, rather thick, distally curved and tapering with the end acute, and somewhat before the end with a spine on the concave margin (this spine is totally hidden by the process itself on fig. 4*c*, partly visible on fig. 4*d*); its heel is short but distinct and the foot rather long. The proximal process is considerably longer than the terminal, considerably curved, with its basal third rather thick, while about the distal fourth is flattened, forming a narrow, distally rounded plate (fig. 4*e*), which seen from the side (figs. 4*c*—4*d*) looks as if the process tapers to an acute end, and at the base of this plate a blunt or acute tooth projects obliquely forwards. The median lobe with a somewhat large, much curved, acute lateral process without any dorsal tooth, while the distal half of the lobe is somewhat feebly chitinized, formed about as a plate with the end rounded and at least frequently folded obliquely inwards as when the upper angular part of a leaf in a book is folded inwards and somewhat backwards. The accessory lobe is long. The setiferous lobe is slightly longer than the median, with about 7 setæ along the terminal margin and none on the outer margin.

Length of a very large female 17.5 m., of an adult male 13.5 mm.; frequently adults of both sexes are smaller.

Remarks. — As to the differences between *E. diomedeæ* Ortm. and *E. mutica* see the description of the last-named species. ORTMANN established *E. diomedeæ* on two Pacific specimens having the "frontal part of the carapace produced as a broad triangular-pointed plate,

arched over the eyes, and covering their peduncles", and he added: "Perhaps *E. diomedeæ* might be better regarded as a variety of *E. pellucida*". When I wrote the Monaco-paper quoted, in which I mentioned "*E. pellucida*" and established three new species with two pairs of lateral denticles on the carapace, I had not seen any specimen agreeing with ORTMANN's figure of his *E. diomedeæ*. Later I received for study a splendid material collected by Prof. A. AGASSIZ in the Pacific, and therein I found some specimens with a very large frontal plate and the rostrum reduced. A subsequent examination gave the result that the specimens with this anomalous frontal plate are mostly males and that their antennulæ and copulatory organs agree completely with the "Siboga" specimens possessing a normal, short, not expanded frontal plate terminating in a well developed rostrum, and with specimens possessing a similar normal frontal plate and rostrum from the AGASSIZ collection. Furthermore I found, that only a few specimens are typical *E. diomedeæ* with the frontal plate so strongly expanded that it nearly covers the eye-stalks, while other adult specimens from the Pacific have the frontal plate and rostrum intermediate in shape between the typical *E. diomedeæ* Ortm. and the form shown in fig. 4*a*. I conclude that the expanded plate is a kind of variation, and the name *E. diomedeæ* is to be used for the species, to which that variety belongs. All specimens in the "Siboga" collection are normal (fig. 4*a*).

Distribution. — The species is widely distributed in the Indian Ocean and the Pacific, but I have not seen any specimen from the Atlantic.

7. *Euphausia mutica* H. J. H. Pl. XIV, figs. 1*a*—1*d*.

1905. *Euphausia mutica* H. J. Hansen, Bull. Mus. Océan. Monaco, N⁰ 42, p. 14 (partim).

Stat. 128. July 22. Lat. 4° 27′ N., long. 125° 25′.7 E. 1645 m. HENSEN vertical net, from 700 m. to surface. 10 specimens, subadult and adult.
Stat. 177ª. September 1. Lat. 2° 30′ S., long. 129° 28′ E. Townet. 1 specimen.

Description. — Frontal plate, rostrum and eyes nearly as in *E. diomedeæ*. The leaflet from first antennular joint (fig. 1*a*) shaped mainly as in *E. diomedeæ*, but presenting some minor differences: it is scarcely or slightly more than half as broad as the end of the joint, directed considerably forwards and upwards but only feebly outwards; the deep incision is less or not at all oblique and the terminal spiniform processes are straight, not curved downwards in proportion to the direction of the plate as is less or more the case in *E. diomedeæ*. The second antennular joint on the upper surface without any vestige of protuberances near the distal angles. The anal process is somewhat broad, in the male with three, in the female with four, spines decreasing in size backwards.

The copulatory organs show some minor and a couple of strong differences from those of *E. diomedeæ*. The terminal process (figs. 1*b*—1*c*) is long, a little more curved and less robust as in *E. diomedeæ*, with the same spine somewhat before the end; the proximal process is shorter and more curved than in *E. diomedeæ*, its terminal fourth forming a rather large, oblong, distally rounded plate (fig. 1*d*), which on the inner side is proximally produced into an oblong protuberance directed inwards and backwards (upwards) towards the origin of the process; furthermore, when the whole organ is folded out (fig. 1*b*) this plate presents its surface and not,

as in *E. diomedeæ*, its lateral margin. The lateral process is smaller than in *E. diomedeæ*, while the distal half of the median lobe, seen from the side (fig. 1 *c*), reminds of the head of a bird on a somewhat short and thin neck and with a deep, somewhat short, much curved and very acute beak, this terminal part being somewhat strongly chitinized; it may be added that when the organ is totally folded out and seen from behind as in fig. 1 *b* the beak cannot be observed, as it then is hidden by the "head". The figures show that the inner (lower) half of the setiferous lobe is distally somewhat peculiarly shaped.

Length 11—12 mm.

Remarks. — This species is easily separated from more than half-grown specimens of *E. diomedeæ* by having no tubercles on the second antennular joint and by the structure of the copulatory organs, the essential points as to these being the quite unique shape of the distal part of the median lobe and the fact that the protuberance from the proximal part of the terminal plate of the proximal process is directed obliquely backwards, while in *E. diomedeæ* the spiniform tooth originates at the base of the narrower plate and projects obliquely forwards.

In the Monaco-paper I wrote: "Second antennular joint has both distal angles ..... either obtuse or each armed with an obliquely conical tubercle", which shows that I had not discovered that the existence or non-existence of these tubercles is a specific character, even of high value. But a later study of the copulatory organs having proved that two species were at hand, I looked for other characters and found the difference in the second antennular joint. Fortunately the name *E. mutica* can be kept for the Monaco-specimens.

Distribution. — I have seen specimens of this species from the Atlantic, the Indian Ocean and the Pacific, but a more detailed account of this topic must be postponed to a subsequent occasion.

b. Species with a single pair of lateral denticles on the carapace and without any process from the dorsal hind margin of third abdominal segment.

8. *Euphausia similis* G. O. Sars, var. *crassirostris* n. Pl. XIV, figs. 2 *a*—2 *c*.

1883. *Euphausia similis* G. O. Sars, Forh. Vid. Selsk. Christiania for 1883, N^{0} 7, p. 13.
1885. *Euphausia similis* G. O. Sars, Challenger Rep. Vol. XIII, p. 79, Pl. XIII, figs. 1—6.

Stat. 85. June 17. Lat. 0° 36′.5 S., long. 119° 29′.5 E. 754 m. Plankton. 1 scarcely half-grown specimen.
Stat. 243. December 2. Lat. 4° 30′.2 S., long. 129° 25′ E. HENSEN vertical net, from 1000 m. to surface. 1 immature female.
Stat. 276. January 9. Lat. 6° 47′.5 S., long. 128° 40′.5 E. HENSEN vertical net, from 750 m. to surface. 1 immature male.

According to my examination of SARS' type of this species in the British Museum his fig. 2 is not quite correct; he figures the rostrum a little too long as compared with the frontal plate, furthermore the inner process of the lobe from first antennular joint is a little longer and more curved outwards than on his figure (fig. 2). I have some very large specimens taken

by the Swedish South-Polar Expedition belonging to *E. similis*; these specimens I compared with the "Siboga" material and found the most perfect agreement excepting in the anomalous vaulting of the frontal plate and the gastric area in the "Siboga" specimens. In the specimens from both sources the antennulæ are very characteristic (figs. 2*b* and 2*c*): the narrow lobe from the first peduncular joint is directed forwards and upwards and is distally bifid with the outer process short and directed a little outwards, the inner process about twice as long and bent somewhat outwards; on the upper side of the second joint the distal inner angle itself is produced as a very short, triangular tooth, while the outer is still less produced; on the third joint its dorsal carina, seen from the side, occupies somewhat more than the distal half of the upper margin. But in the two largest "Siboga" specimens the frontal plate is a little longer, and the rostral process as much shorter, than in the Swedish specimens; furthermore in the latter specimens the frontal plate and the elevated gastric area have the usual, rather narrow keel, and the frontal plate with rostrum has, seen from the side, the upper margin feebly concave, but in the two largest "Siboga" specimens the frontal plate and a very short part behind it have the upper margin considerably convex, while, seen from above, the upper carina is extremely broad and rounded along the frontal plate and the gastric area (fig. 2*a*); in the immature male the upper margin of the rostrum is also a little sloping (fig. 2*b*), while in the immature female it is bent a little upwards. I am apt to think that this deviating shape is analogous with the curious development of the rostral plate in some Pacific specimens of *E. diomedeæ*, consequently not of specific value (in the small "Siboga" specimen the features described are much less developed), but the question can scarcely be settled with absolute certainty without an examination of the copulatory organs in adult males, and the male in the "Siboga" collection is immature with the processes far from finally developed. Therefore I establish the specimens as a named variety of *E. similis*.

Length of the largest "Siboga" specimen, the immature male, 22 mm.; a Swedish specimen measures 31.5 mm.

Distribution. — The specimen described by Sars is from the South Atlantic, south-east of Buenos Ayres; Ortmann gives it from "Südl. Äquatorialstrom" and from lat. 40° 20′ S., long. 7° 10′ E.

9. *Euphausia tenera* H. J. H. Pl. XIV, figs. 3*a*—3*e*.

1885. *Euphausia gracilis* G. O. Sars, Challenger Rep. Vol. XIII, p. 89, Pl. XV, figs. 12—23 (not *E. gracilis* Dana).
1905. *Euphausia tenera* H. J. Hansen, Bull. Mus. Océan. Monaco, N° 42, p. 9.

Stat. 66. May 7/8. Bank between islands of Bahuluwang and Tambolungan, south of Saleyer. 8—10 m. Plankton. 14 specimens.
Stat. 75. June 8. Lat. 4° 57′.4 S., long. 119° 2′.8 E. 18 m. Hensen vertical net, with electric light, from 11 m. to surface. 2 small specimens.
Stat. 118. July 13. Lat. 1° 38′ N., long. 124° 28′.2 E. Hensen vertical net, from 900 m. to surface. 22 specimens.
Stat. 128. July 22. Lat. 4° 27′ N., long. 125° 25′.7 E. 1645 m. Hensen vertical net, from 700 m. to surface. 4 specimens.

Stat. 132 (probably). July 25. Lat. 5° 56′.7 N., long. 126° 25′ E. 3302 m. Surface. 3 specimens.
Stat. 141. August. 5. Lat. 1° 0′.4 S., long. 127° 25′.3 E. 1950 m. HENSEN vertical net, from 1500 m. to surface. 10 specimens.
Stat. 146. August 9. Lat. 0° 36′ S., long. 128° 32′.7 E. 512 m. Surface. 2 specimens.
Stat. 148. August 10. Lat. 0° 17′.6 S., long. 129° 14′.5 E. 1855 m. HENSEN vertical net, from 1000 m. to surface. 4 specimens.
Stat. 165. August 20/22. Anchorage on North-east side of Daram-island (False Pisangs), East-coast of Misool. Surface. 6 specimens.
Stat. 168. August 22/23. Anchorage North of Sabuda-island. Surface. 2 specimens.
Stat. 177ª. September 1. Lat. 2° 30′ S., long. 129° 28′ E. Townet. 7 specimens.
Stat. 185. September 12. Lat. 3° 20′ S., long. 127° 22′.9 E. HENSEN vertical net, from 1536 m. to surface. 8 specimens.
Stat. 189ª. September 12. Lat. 2° 22′ S., long. 126° 46′ E. Townet. 15 specimens.
Stat. 203. September 19. Lat. 3° 32′.5 S., long. 124° 15′.5 E. HENSEN vertical net, from 1500 m. to surface. Large number of specimens.
Stat. 205. September 20. Buton-Strait. Surface. 1 specimen.
Stat. 217. October 31. Lat. 6° 40′.6 S., long. 123° 14′.7 E. 2477 m. Horizontal cylinder. 3 larvæ.
Stat. 220. November 1/3. Anchorage off Pasir Pandjang, west coast of Binongka. 278 m. Surface. 4 specimens, 3 of which are larvæ.
Stat. 223. November 6. Lat. 5° 44′.7 S., long. 126° 27′.3 E. 4391 m. Surface. 17 specimens.
Stat. 225. November 8. 5700 M. N. 279° E. from Southpoint of South-Lucipara-island. Horizontal cylinder. 9 specimens.
Stat. 243. December 2. Lat. 4° 30′.2 S., long. 129° 25′ E. HENSEN vertical net, from 1000 m. to surface. 1 specimen.
Stat. 276. January 9. Lat. 6° 47′.5 S., long. 128° 40′.5 E. HENSEN vertical net, from 750 m. to surface. 2 specimens.
Stat. 282. January 15/17. Lat. 8° 25′.2 S., long. 127° 18′.4 E. 27—54 m. Surface. 1 specimen.

Description. — This species, which is small, very slender and with quite small eyes, has been well described and figured by SARS; only the antennulæ and the copulatory organs require a supplementary treatment. The antennulæ show some sexual difference. In the male (fig. 3*a*) the first peduncular joint has no freely protruding leaflet or process, but above near the end some conspicuous, erect, curved setæ, while the second joint is produced into a large, thin lobe covering a not inconsiderable part of the upper surface of the third joint, the lobe hiding proximally the base of the joint excepting the outer third and being almost as long as broad with the outer margin directed obliquely forwards and inwards and terminally rounded. In the female (fig. 3*b*) the first peduncular joint has no curved setæ, but the upper terminal margin has a little from its inner end a very small, triangular, flat process directed somewhat upwards and visible from the side, while the second joint has a basally rather broad, very short lobe terminating in an angle. — The anal spine on the lower side of sixth abdominal segment in the male simple, in the female with a smaller, spiniform tooth from the base behind the large, curved main spine.

The copulatory organs (figs. 3*c*—3*e*) have the main plate and the lobes developed essentially as in *E. diomedeæ* Ortm. The terminal process is rather short, somewhat tapering with the end curved and acute, its foot is very long and the heel somewhat long and very curved. The proximal process is very much longer than the terminal, very considerably curved with the proximal two-fifths somewhat inflated on the outer side; its distal part is moderately broad to the end (fig. 3*d*), which is very obliquely cut off, bearing a comb of about four spiniform

processes, and from the upper angle projects a considerably curved, moderately slender hook, which is more than twice as long as the comb, distally bifid and on the concave margin with a slender denticle. The lateral process is somewhat large and distally very much curved, hook-shaped, with a sharp tooth on the convex margin just beyond the curvature (fig. 3*e*); the distal half of the median lobe is moderately broad but considerably narrower than the proximal, not folded and with the end rounded. The accessory lobe is well developed; the setiferous lobe is somewhat longer than the median, with the somewhat produced, triangular terminal part bearing about 7 setæ, while the outer margin itself is naked.

Length 8—9 mm.

Remarks. — G. O. Sars referred this species to *E. gracilis* Dana, but as pointed out in my Monaco-paper Dana's species is unrecognisable and cannot be the form described by Sars, because Dana's form, according to his statement, was longer and its first antennular joint was "sparingly produced and acute at apex". As Dana's types are lost, I cancelled the name *E. gracilis*.

E. tenera is easily distinguished from all other species hitherto known excepting about half-grown specimens of the *gibba*-group (*E. gibba* G. O. Sars, *E. pseudogibba* Ortm., *E. hemigibba* n. sp. and *E. paragibba* n. sp.). Adult or subadult males of *E. tenera* are of course instantly separated from small specimens of the *gibba*-group by possessing copulatory organs and by the lobe from second antennular joint; females may be separated by having the very small eyes at least partly black and by having the third abdominal segment quite unarmed, while the process on this segment begins to develop in rather early stages of *E. pseudogibba* and allied forms.

Distribution. — The species is known from many places in the tropical and subtropical areas of the Atlantic and the Pacific.

c. Species with a single pair of lateral denticles on the carapace and with a dorsal process on the hind margin of third abdominal segment, but without processes on the two following segments.

This group comprises 6 already established and several hitherto undescribed species, but the "Siboga" collection contains only 4 species, 2 of which are new, while the third, *E. Sibogæ* H. J. H., is known only from a note without figures.

10. *Euphausia pseudogibba* Ortm. Pl. XIV, figs. 4*a*—4*e*.

1893. *Euphausia pseudogibba* Ortmann, Decapoden und Schizopoden, in Ergebn. der Plankton-Exped. der Humboldt-Stiftung. B. II, G., b., p. 12. Taf. I, Fig. 6.

Stat. 118. July 13. Lat. 1° 38′ N., long. 124° 28′.2 E. Hensen vertical net, from 900 m. to surface. 1 specimen.
Stat. 141. August 5. Lat. 1° 0′.4 S., long. 127° 25′.3 E. 1950 m. Hensen vertical net, from 1500 m. to surface. Many specimens, the majority only half-grown or still smaller.
Stat. 143. August 7. Lat. 1° 4′.5 S., long. 127° 52′.6 E. 1454 m. Hensen vertical net, from 1000 m. to surface. 13 specimens, half of them adult.

Stat. 148. August 10. Lat. 0° 17′.6 S., long. 129° 14′.5 E. 1855 m. HENSEN vertical net, from 1000 m. to surface. 5 adult specimens.
Stat. 177ª. September 1. Lat. 2° 30′ S., long. 129° 28′ E. Townet. 5 specimens.
Stat. 185. September 12. Lat. 3° 20′ S. long. 127° 22′.9 E. HENSEN vertical net, from 1536 m. to surface. 10 specimens.
Stat. 189ª. September 12. Lat. 2° 22′ S., long. 126° 46′ E. Townet. 13 specimens; some among them small.
Stat. 203. September 19. Lat. 3° 32′.5 S., long. 124° 15′.5 E. HENSEN vertical net, from 1500 m. to surface. Many specimens.
Stat. 216. October 30. Lat. 6° 49′ S., long. 122° 43′ E. 2190 m. FOWLER closing net, from 975 to 415 m. 2 specimens.
Stat. 230. November 14. Lat. 3° 58′ S., long. 128° 20′ E. HENSEN vertical net, from 2000 m. to surface. 12 specimens.
Stat. 243. December 2. Lat. 4° 30′.2 S., long. 129° 25′ E. HENSEN vertical net, from 1000 m. to surface. 8 specimens.
Stat. 245. December 3. Lat. 4° 16′.5 S., long. 130° 15′.8 E. 4956 m. Surface. 3 specimens.

Description. — In general aspect and most features closely allied to *E. gibba* G. O. Sars. Frontal plate very short; rostrum oblong-triangular, somewhat acuminate and very acute, about as long as the breadth of second antennular joint and scarcely as long as the diameter of the small eyes. Lobe from first antennular joint (fig. 4*a*) not half as broad as the end of the joint, directed obliquely forwards, upwards and somewhat outwards, not quite as long as broad, somewhat oblique-triangular with the inner margin feebly convex, the end acute and generally with an extremely low tooth or rather sharp, protruding angle near the base on the outer side. Second antennular joint above with the distal inner angle showing an extremely small, sharp tooth, while at the outer side the lateral corner itself is rounded, but a low, sharp angle projecting forwards is seen above a little inside the lateral margin of the joint. Third antennular joint, seen from the outer side (fig. 4*a*), with the dorsal carina (*c.*) disappearing nearly suddenly at a considerable distance from the second joint, the upper margin of the carina proximally bending almost suddenly downwards. Dorsal process of third abdominal segment, seen from above, shaped as an oblong-triangular, distally acuminate and very acute plate, which is far from being half as long as the next segment (figs. 4*b*—4*c*). Sixth abdominal segment nearly twice as long as deep (fig. 4*b*) and keeping scarcely the same depth to not far from the end, and then the lower margin is curved considerably upwards; the anal spine in the male is small, slender and simple, in the female larger, much broader, compressed and terminating in three or four spiniform branches. Exopod of uropods very little shorter than the telson and slightly or scarcely longer than the endopod.

The copulatory organs (figs. 4*d* and 4*e*) have the main plate, the inner, the auxiliary and the setiferous lobes shaped nearly as in *E. tenera*. The terminal process (p^2.) is of very moderate length, distally ending in two short, acute branches, the inner curved and longer than the other which is slender and spiniform; the foot (*f.*) is very long, and the heel (*h.*) long and distinctly curved. The proximal process (p^3.) is long, reaching much beyond the terminal; the short basal part is much inflated and protruding outwards; its major part is somewhat curved, before the middle with the inner margin convex and then a little sinuate, moderately strong and keeping the breadth to near the acute end, but the most distal part is compressed and

nearly semicircularly curved. The median lobe has somewhat more than its proximal half very broad, with the strong, much curved, proximally thick lateral process placed on the posterior surface somewhat from the inner and considerably from the terminal margin, as this part of the lobe terminates in a somewhat long, transverse margin, from the outer edge of which the distal part of the lobe projects; this distal part is shaped about as a moderately long, somewhat thick, distally a little expanded and obliquely rounded process which reaches beyond the end of the setiferous lobe, is straight and stiff, though not consisting of the hard, semitransparent chitine as the real processes. The setiferous lobe without lateral setæ, while its end is angularly bent, with 7 setæ.

Length 13—13.5 mm. (some specimens from the Atlantic 15 mm.).

Remarks. — SARS' type of *E. gibba* G. O. S. is from the Pacific. His figure of the copulatory organs is of great value for the determination, as it shows a very long and strongly curved proximal process; I have at hand specimens from the Pacific possessing such copulatory organs. SARS states that the "Challenger" material of *E. gibba* comprises specimens from the Atlantic, but these specimens are not in the British Museum, and I suppose that SARS has committed an error, as the specimens of the *gibba*-group from the Atlantic hitherto investigated by me belong to two other species, viz. *E. pseudogibba* Ortm. and *E. hemigibba* n. sp. — ORTMANN established his *E. pseudogibba* on Atlantic specimens from the Plankton-Expedition, but as he gives a long list of localities I am nearly sure that he had both the Atlantic species named among his material. Nearly all the differences pointed out by him between his *E. pseudogibba* and *E. gibba* G. O. Sars are of no value — this is partly due to some inaccuracies in SARS' figures — and under such circumstances I assign the name *pseudogibba* to the most clumsy of the two Atlantic species, as ORTMANN states that *E. pseudogibba* is more clumsy than *E. gibba*, according to SARS' figure of the latter species.

The best characters of the males of *E. pseudogibba* are some points in the structure of the copulatory organs: the strongly curved, broad end of the proximal process is unique in the *gibba*-group, and by the shape of the distal part of the median lobe it is instantly separated from *E. hemigibba* n. sp. and *E. gibba* G. O. Sars (in the last-named species this median lobe terminates in a very curved, slender process not found in any other species of *Euphausia* examined by me), but agrees moderately with *E. paragibba* n. sp.; however, in this latter species the lateral process is armed on the outer margin, while it is unarmed in *E. pseudogibba*. — The character from the keel on third antennular joint is rather good for separating females of *E. pseudogibba* and *E. hemigibba* from each other, but less valuable for separating *E. pseudogibba* from *E. paragibba*, and the character afforded by the shape of sixth abdominal segment is poor.

Finally it may be mentioned that *E. pseudogibba* in the living state probably is coloured somewhat differently from *E. hemigibba* and *E. paragibba*, as several specimens of the first-named form are darker, more brownish, than specimens of the two other species found in the same bottle (from "Siboga" Stat. 148); specimens of *E. pseudogibba* and *E. hemigibba* in the same bottle of the Monaco-collection show similar differences.

Distribution. — I have at hand this species from stations in the northern subtropical part of the Atlantic, but I have not seen any specimen from the Pacific.

11. *Euphausia hemigibba* n. sp. Pl. XIV, figs. 5*a*—5*f*.

Stat. 148. August 10. Lat. 0° 17'.6 S., long. 129° 14'.5 E. 1855 m. HENSEN vertical net, from 1000 m. to surface. 8 adult specimens.

Description. — Very closely allied to *E. pseudogibba*. Frontal plate, rostrum, eyes and antennulæ completely as in that species, excepting the dorsal keel on third antennular joint, as this keel, seen horizontally from the outer side (fig. 5*a*), reaches about the upper angle of the second joint. The dorsal process on third abdominal segment (figs. 5*b* and 5*c*) is an acute plate as in *E. pseudogibba*, but much more oblong-triangular, and conspicuously longer, about half as long as the fourth segment. Sixth abdominal segment, seen from the side (fig. 5*b*), tapers about from the middle, and more behind the lower margin is more flatly rounded than in *E. pseudogibba*; the anal spine in both sexes and the relative length of the rami of the uropods and the telson as in last-named species.

The copulatory organs (figs. 5*d*—5*f*) differ from those in *E. pseudogibba* especially by the shape of the processes on the inner lobe and by the distal part of the median lobe. The terminal process is somewhat similar to that in *E. pseudogibba*, but the foot is a little shorter and the heel longer than in that species, and the distal third of the process itself is somewhat different, being compressed and distally curved with the apex triangular, and a lateral, slender, a little curved spine originates at the base of this distal third on the lower side. The proximal process reaches rather little beyond the terminal process; its major proximal part is about as in the preceding form, but less curved, while it is suddenly bent a little more at the beginning of the terminal fifth which is shaped as a somewhat broader, very oblong and a little oblique plate, with the major part of its inner margin and the end finely serrated (fig. 5*f*). The median lobe has its proximal half considerably narrower than in *E. pseudogibba* and without any terminal margin; the lateral process, placed on its lower surface at the inner margin, is somewhat slender, curved as a hook and without any dorsal tooth at the middle; the distal part of the lobe is normal, not firmly chitinized, only a little narrower than the proximal part, oblong, with the end rounded and sometimes with the outer terminal part folded backwards.

Length 12—16.5 mm. (the largest specimen seen is from the Atlantic).

Remarks. — The differences between this species and *E. pseudogibba* are pointed out in the description; the differences between it and *E. paragibba* are given below. It may be added that the feebly curved, at the end spathulate proximal process and the normal, rather broad, unarmed distal part of the median lobe of the copulatory organs afford characters separating *E. hemigibba* from the three other species of the *gibba*-group.

Distribution. — As far as I know at present as that of *E. pseudogibba*.

12. *Euphausia paragibba* n. sp. Pl. XIV, figs. 6*a*—6*d*.

Stat. 148. August 10. Lat. 0° 17'.6 S., long. 129° 14'.5 E. 1855 m. HENSEN vertical net, from 1000 m. to surface. 3 adult specimens (♂ and ♀).

Description. — Very closely allied to the two preceding species. Frontal plate, rostrum, eyes and antennulæ quite as in *E. pseudogibba*, the only difference being that the

upper keel on third antennular joint, seen horizontally from the outer side (fig. 6*a*), reaches proximally a little nearer to the end of the second joint and decreases gradually towards the base. Dorsal process on third abdominal segment (fig. 6*b*) as to shape and length completely as in *E. pseudogibba*, while the sixth segment is shaped as in *E. hemigibba*. The anal spines in both sexes and the relative length of the rami of the uropods and the telson as in the preceding species.

The copulatory organs (figs. 6*c* and 6*d*) differ from those in the preceding species by the shape of the distal part of the proximal process, by the outline of the median lobe and the presence of dorsal teeth on the lateral process. The terminal process is rather similar to that in *E. hemigibba*, with a similar foot and rather long heel, but it differs in having the part beyond the distal, lateral, spiniform tooth still a little longer, not compressed, gradually tapering and somewhat curved towards the end. The proximal process overreaches a little the terminal one; it is somewhat curved at the middle, its distal half tapers gradually to the acute end, and a short terminal part is not inconsiderably curved. The proximal major part of the median lobe is broad, from the middle much and obliquely tapering to the base of the distal part, which is stiff, narrow, shaped essentially as in *E. pseudogibba*, but with the terminal part a little more expanded, obliquely oval, not reaching beyond the end of the setiferous lobe; the lateral process, which is situated on the posterior surface of the broad part a little from the inner margin, is about semicircularly curved with the proximal half thick and the distal slender, the process becoming suddenly slender at the middle, where its outer margin is deflexed and bears three oblong, acute teeth (fig. 6*d*).

Length 14—17 mm.

Remarks. — It may be pointed out that in no other species of the *gibba*-group the proximal process has the shape described or the lateral process any tooth.

Distribution. — I have seen specimens from the Pacific, but not from the Atlantic.

12. *Euphausia Sibogæ* H. J. H. Pl. XIV, figs. 7*a*—7*d*.

1908. *Euphausia Sibogæ* H. J. Hansen, in M. Bedot & C. Pictet, Voyage scientifique dans l'Archipel Malais, Vol. II, p. 244.

Stat. 35. March 28. Lat. 8° 0′.3 S., long. 116° 59′ E. 1310 m. Surface. 1 specimen.
Stat. 66. May 7/8. Bank between islands of Bahuluwang and Tambolungan, South of Saleyer. 8—10 m. Enormous quantity of specimens, both adults and half-grown.
Stat. 106. July 4. Anchorage off Kapul-island, Sulu-Archipelago. 13 m. Townet. 4 small specimens.
Stat. 141. August 5. Lat. 1° 0′.4 S., long. 127° 25′.3 E. 1950 m. HENSEN vertical net, from 1500 m. to surface. 12 specimens, of various size.
Stat. 143. August 7. Lat. 1° 4′.5 S., long. 127° 52′.6 E. 1454 m. HENSEN vertical net, from 1000 m. to surface. 3 specimens.
Stat. 144. August 7/9. Anchorage North of Salomakiëe-(Damar-)island. 45 m. Townet. 1 specimen.
Stat. 165. August 20/22. Anchorage on North-side of Daram-island (False Pisangs), East-coast of Misool. 49 m. Townet, surface. 14 larvæ.
Stat. 169. August 23/25. Anchorage off Atjatuning, West-coast of New-Guinea. 57 m. Townet, surface. About 40 larvæ.
Stat. 184. September 11/12. Anchorage off Kampong Kelang, South-coast of Manipa-island, 36 m. Townet, surface. 2 larvæ.

Stat. 185. September 12. Lat. 3° 20′ S., long. 127° 22′.9 E. HENSEN vertical net, from 1536 m. to surface. About 25 specimens, of every size.
Stat. 189ª. September 12. Lat. 2° 22′ S., long. 126° 46′ E. Townet. 3 small specimens.
Stat. 194—197. September 15. Lat. 1° 53′.5 S., long. 126° 39′ E.—lat. 1° 45′.3 S., long. 127° 8′.3 E. Plankton. 1 specimen.
Stat. 203. September 19. Lat. 3° 32′.5 S., long. 124° 15′.5 E. HENSEN vertical net, from 1500 m. to surface. Large quantity of specimens, adults and more than half-grown.
Stat. 205. September 20/21. Buton-strait. Surface. 2 specimens (1 young, 1 larva).
Stat. 225. November 8. 5700 M. N. 279° E. from Southpoint of South-Lucipara-island. Horizontal cylinder. 8 specimens.
Stat. 243. December 2. Lat. 4° 30′.2 S., long. 129° 25′ E. HENSEN vertical net, from 1000 m. to surface. 1 specimen.

Description. — Moderately slender. The frontal plate (fig. 7*a*) is a low triangle, terminating in a small, regularly or oblong-triangular, very acute rostrum at most about half as long as the breadth of second antennular joint. The carapace with the keel on the gastric area somewhat high at the middle, but not really angular; the lateral margin with a denticle behind the middle. Eyes somewhat large, black, with a peculiar dark-greyish or dark greyish-bluish tint. First antennular joint without vestige of any leaflet or tooth at the distal upper end; second joint without any distal protuberance or produced angle; second and third joints together scarcely as long as the first joint. Third abdominal segment dorsally with a short, slender, a little compressed, scarcely curved, acute process (figs. 7*b* and 7*c*); the following segments unarmed. Sixth segment slender and twice or a little more than twice as long as deep; the anal spine simple and curved in both sexes. Rami of the uropods subequal in length and a little shorter than the telson.

The copulatory organs (fig. 7*d*) show several points of interest. The terminal process is of very moderate length, thick at the base, tapering to the acute end and with the terminal part somewhat curved; the foot is not long, and the heel moderately long, somewhat curved. The proximal process is rather far from reaching the end of the terminal process; somewhat less than the proximal half is rather thick and considerably curved, with the outer margin very convex; then the process becomes somewhat more narrow, but is soon again thickened, being somewhat beyond the middle as broad as a little from the base; its distal third tapers first feebly and the short terminal part tapers rapidly to the acute end and is bent somewhat inwards. The median lobe is of middle breadth and tapers feebly to the rounded end; the lateral process, which is placed at the middle of the inner margin, is medium-sized, hook-shaped, being very strongly curved much beyond the middle, with an oblong, acute tooth on the outer margin at the top of the curvature. The setiferous lobe is broad, with the terminal margin angularly bent and bearing 5 setæ; besides two somewhat short setæ on the outer margin of the lobe and the main plate.

Length 8—8.5 mm.

Half-grown Specimens and Larvæ. — As already stated, the adults have a somewhat high but not really angular keel on the gastric area. In half-grown specimens this keel has an elevated part shaped as a low triangle four or three times as long as high and placed a little nearer to the end of rostrum than to the posterior cephalothoracic margin. In

the *Furcilia*- and *Calyptopis*-stages this keel is extremely conspicuous, twice or less than twice as long as high, with the front margin nearly vertical, the angle rounded, and it is situated at the middle of the carapace or in the younger stages even nearer the posterior than the front end. In these larval stages the eyes are rather large, semiglobular, not oblong, with the eye-stalks rather long and distally thick; the telson of these larvæ differs from those in the corresponding stages of "*E. pellucida*" as given by SARS in various particulars, especially as to the length of the spines. By the development and shape of the eyes and especially by the high and short dorsal keel on the carapace these larvæ are easily distinguished from larvæ belonging to the *E. Krohnii*-group (*E. Krohnii* Brandt, *E. diomedeæ* Ortm., *E. mutica* H. J. H., etc.) and from those of the "*gibba*"-group known to me.

Remarks. — This species is easily distinguished from the numerous other species with a spine on third abdominal segment by the shape and shortness of this spine, by the eyes, the short rostrum, the long sixth abdominal segment and especially by having no leaflet or process on the first and no angle or lamella on the second antennular joint; especially this structure of the antennular peduncles is quite unique.

Distribution. — In pelagic material from Amboina I found 3 young specimens and gave a preliminary description of the species in the report quoted. I have not seen specimens from any locality outside the Archipelago explored by the "Siboga".

Pseudeuphausia n. gen.

Nearly allied to *Euphausia*, but differing in the following characters. Carapace produced into a long frontal plate with the broad end transversely cut off, without rostrum; lateral margin with a small tooth near the posterior end. Endopod of fifth pair of thoracic legs in the male somewhat shorter than in *Euphausia*, with the sum of the three distal joints scarcely more than half as long as on the fourth pair; in the female that endopod is only half as long as on the fourth pair, with the third joint a little expanded, third and fourth joints together strongly curved, forming somewhat less than half of a cercle for the reception of the ovisac, while the three terminal joints are extremely short, together only as long as the terminal joint of fourth pair and only half as long as in the male. Copulatory organs (Pl. XV, figs. 1 *c* and 1 *d*) quite aberrant; the inner lobe (*li.*) with three small spine-shaped processes, the lateral process of the median lobe (*lm.*) replaced by an extremely large, very oblong, leaf-shaped plate (p^4.), the auxiliary lobe wanting and the setiferous lobe (*ls.*) extremely narrow and quite naked. The females carry an oblong-triangular ovisac, rounded anteriorly and posteriorly divided by a median incision, showing that it consists of two ovisacs glued together in front.

The genus is established on a single species, *Euphausia latifrons* G. O. Sars.

14. *Pseudeuphausia latifrons* G. O. Sars. Pl. XV, figs. 1 *a*—1 *d*.

1883. *Euphausia latifrons* G. O. Sars, Forh. Vid. Selsk. Christiania for 1883, N° 7, p. 19.
1885. *Euphausia latifrons* G. O. Sars, Challenger Rep. Vol. XIII, p. 95; Pl. XVI, figs. 17—23.

Stat. 7. March 11. Lat. 7° 55′.5 S., long. 114° 26′ E. 15 m. and more. Shore-exploration. 1 specimen.

Stat. 16. March 15/16. Lat. 6° 59′ S., long. 115° 24′.7 E. Bay of Kankamaraän, S. coast of Kangeang. 22 m. Vertical net, with electric light. 42 specimens (some half-grown, several larvæ).

Stat. 35. March 28. Lat. 8° 0′.3 S., long. 116° 59′ E. 1310 m. Surface. 1 specimen.

Stat. 37. March 30/31. Sailus ketjil, Paternoster-islands. 27 m. and less. Surface. 10 specimens.

Stat. 40. April 2. Anchorage off Pulu Kawassang, Paternoster-islands. Townet. About 50 specimens.

Stat. 43. April 4/5. Anchorage off Pulu Sarassa, Postillon-islands. Depth up to 36 m. HENSEN vertical net with electric light. 18 specimens.

Stat. 66. May 7/8. Bank between islands of Bahuluwang and Tambolungan, South of Saleyer. 8—10 m. Plankton. Immense number of specimens.

Stat. 75. June 8. Lat. 4° 57′.4 S., long. 119° 2′.8 E. 18 m. HENSEN vertical net with electric light, from 11 m. to surface. 3 young specimens.

Stat. 99. June 28/29/30. Lat. 6° 7′.5 N., long. 120° 26′ E. Anchorage off North-Ubian. 16—23 m. Townet, surface. 3 specimens.

Stat. 106. July 4. Anchorage off Kapul-island, Sulu-Archipelago. 13 m. Townet, 8 specimens.

Stat. 112. July 7. Lat. 3° 1′ N., long. 122° 2′ E. Horizontal cylinder. 2 specimens.

Stat. 117[a]. July 12. Lat. 1° 15′ N., long. 123° 37′ E. Townet. 14 specimens.

Stat. 133. July 25/27. Anchorage off Lirung, Salibabu-island. Depth up to 36 m. Surface. 1 specimen.

Stat. 136. July 29. Ternate anchorage. 23 m. Townet, surface. 3 specimens.

Stat. 138. August 3. Anchorage on the East coast of Kajoa-island. 66 m. Townet, surface. Immense number of specimens.

Stat. 140. August 4/5. Bay of Batjan. 13 m. Townet, surface. 1 specimen.

Stat. 141. August 5. Lat. 1° 0′.4 S., long. 127° 25′.3 E. 1950 m. HENSEN vertical net, from 1500 m. to surface. 7 larvæ.

Stat. 142. August 5/7. Anchorage off Laiwui, coast of Obi-Major. Plankton. 4 specimens.

Stat. 143. August 7. Lat. 1° 4′.5 S., long. 127° 52′.6 E. 1454 m. HENSEN vertical net, from 1000 m. to surface. 1 specimen.

Stat. 144. August 7/9. Anchorage North of Salomakiëe-(Damar-)island. 45 m. Townet. 50 specimens.

Stat. 146. August 9. Lat. 0° 36′ S., long. 128° 32′.7 E. 512 m. Townet, surface. 1 young specimen.

Stat. 174. August 28/29. Waru-bay, North coast of Ceram. 18 m. Townet. 1 specimen.

Stat. 177[a]. September 1. Lat. 2° 30′ S., long. 129° 28′ E. Townet. 2 specimens.

Stat. 184. September 11/12. Anchorage off Kampong Kelang, South coast of Manipa-island. 36 m. Townet, surface. 1 specimen.

Stat. 185. September 12. Lat. 3° 20′ S., long. 127° 22′.9 E. HENSEN vertical net, from 1536 m. to surface. 1 specimen.

Stat. 189[a]. September 12. Lat. 2° 22′ S., long. 126° 46′ E. Townet. 3 specimens.

Stat. 194. September 15. Lat. 1° 53′.5 S., long. 126° 39′ E. 1504 m. Plankton. 20 specimens.

Stat. 194—197. September 15. Lat. 1° 53′.5 S., long. 126° 39′ E.—lat. 1° 45′.3 S., long. 127° 8′.3 E. Plankton. 3 specimens.

Stat. 203. September 19. Lat. 3° 32′.5 S., long. 124° 15′.5 E. HENSEN vertical net, from 1500 m. to surface. 1 specimen.

Stat. 217. October 31. Lat. 6° 40′.6 S., long. 123° 14′.7 E. 2477 m. Horizontal cylinder. 3 specimens.

Stat. 220. November 1/3. Anchorage off Pasir Pandjang, West coast of Binongka. Vertical net. 5 specimens.

Stat. 223. November 6. Lat. 5° 44′.7 S., long. 126° 27′.3 E. 4391 m. Surface. 1 specimen.

Stat. 225. November 8. 5700 M. N. 279° E. from Southpoint of South-Lucipara-island. Horizontal cylinder. 6 specimens.

Stat. 276. January 6. Lat. 6° 47′.5 S., long. 128° 40′.5 E. HENSEN vertical net, from 750 m. to surface. 1 specimen.

Stat. 282. January 15/17. Lat. 8° 25'.2 S., long. 127° 18'.4 E. Anchorage between Nusa Besi and the N.E.-point of Timor. 27—54 m. Plankton. 1 specimen.

Stat. 315. February 17/18. Anchorage East of Sailus Besar, Paternoster-islands. Depth up to 36 m. Plankton. 4 specimens.

Description. — The frontal plate is long, with the lateral margins very concave, the front margin slightly concave or straight and the surface deeply concave longitudinally (fig. 1*a*); the median part of the gastric area is somewhat raised as a broad, dorsally rounded keel terminating in front as a narrow, low keel on the frontal plate. The eyes midde-sized, black. The antennulæ are extremely characteristic (fig. 1*b*); the first joint is almost broader at the distal than at the proximal end and distally raised as a moderately high, very oblique keel running from the inner margin outwards and forwards to the front margin near the outer angle; this keel bears about 9 or 10 slender, spiniform processes projecting upwards and somewhat forwards, and the outer distal angle of the joint is produced into a thicker, acute process of almost the same length. The second peduncular joint has in both sexes a little from the terminal margin on the outer major part of the upper side and a little downwards on the outer side a curved, close row of stiff setæ all converging to a point near the middle of the third joint; the setæ are so closely arranged that together they look nearly as a triangular lappet with the base convex. The abdomen without dorsal spines; the anal spine curved and simple in both sexes. The uropods with the rami subequal in length and very little shorter than the telson.

The copulatory organs (figs. 1*c* and 1*d*) are mentioned in the diagnosis of the genus, but some points may be added. The inner lobe (*li.*) is broad with the terminal margin oblique; at the middle of this margin a slender, somewhat small spine is found (p^1.), certainly representing the spine-shaped process (in a single specimen I found two spines near each other (fig. 1*d*), but that is most probably a casual anomaly); near the end of the inner margin a somewhat longer and stronger spine is found representing the terminal process (p^2.) and a little more proximally another spine intermediate in size between the two others and representing the proximal process (p^3.). On the basal part of the median lobe before the insertion of the large plate some tiny hooks (fig. 1*d*, *c*) are seen, perhaps having the same unknown function as the hooks on the auxiliary lobe in other genera.

Length 8.5—9 mm.

Remarks. — Sars' description and drawings of this species are imperfect as to some points, and before I had seen his type I was uncertain whether my specimens really belonged to his species. His type preserved in the British Museum is marked "off Port Jackson", and it differs from the figures and description given by Sars and agree with the "Siboga" specimens in the following main points: the existence of a denticle on the lower margin of the carapace near the end, the existence of the curious row of strong setæ on the second antennular joint, finally that the oblique keel with its spines at the end of first antennular joint is quite as described and figured here, thus differing strongly from Sars' figs. 18 and 19. It may be added that his fig. 22 is incorrect as to the relative length of the rami of the uropods and the telson and does not agree with his fig. 17, on which these particulars are nearly correct. Finally, he draws (figs. 22—23) the flat spines near the tip of the telson as being especially broad with

the end curved inwards, but I have not seen any similar thing, as these setæ show the same shape in *P. latifrons* as in the species of *Euphausia*.

Distribution. — Sars stated that his specimens were from the south-east coast of Australia, the Arafura Sea and off Mindanao, Philippine-Islands.

Nematoscelis G. O. Sars.

This genus is difficult. Sars established 4 species: *N. megalops*, *N. microps*, *N. tenella* and *N. rostrata*. *N. megalops* is easily distinguished by having the long spines on the elongated pair of legs projecting both from the penultimate and from the last joint, while in all other species hitherto found these spines project only from the last joint. Sars founded his *N. tenella* and *N. rostrata* on half-grown or still younger specimens; in 1905 I cancelled *N. rostrata* as the young of *N. microps* and redescribed *N. tenella* from adult specimens of both sexes. In 1887 Chun established *N. Sarsii* on a specimen from the Mediterranean, but it is quite impossible from the characters given to guess anything on the relationship of the animal, and if the type does not exist the species ought to be cancelled as unrecognisable. In 1896 Chun established — described and figured — *N. mantis* on a male taken off Funchal (Madeira); in 1905 I cancelled it as belonging to *N. microps*, but in spite of the shape of the eye on Chun's fig. 1 (Taf. XII) this interpretation is wrong: the animal belongs certainly to *N. tenella* G. O. Sars, as according to Chun's fig. 8 the proximal process of the copulatory organs has several very conspicuous saw-teeth on the distal part of the inner margin, and the lower antennular flagellum is straight at the base (not curved as in *N. gracilis* n. sp.; see below). In 1907 Illig attempted a revision of the genus, re-establishing *N. rostrata* G. O. Sars as a valid species, but the characters used by him for separating *N. rostrata* from *N. microps* are of no value.

Later I began to examine the copulatory organs, and then I arrived at the result, that my vast material from the three Oceans comprises 5 species, viz. *N. megalops* G. O. Sars, *N. microps* G. O. Sars, *N. tenella* G. O. Sars and 2 undescribed species closely allied to *N. microps*; one of these new species, for which I propose the name *N. atlantica*, I possess only from the Atlantic, while I have specimens of the other, *N. gracilis*, in the "Siboga" collection and from the Pacific. The adult males of all species are easily separated by examining the copulatory organs, while the adult females and especially immature specimens of three of the species (*N. microps*, *N. atlantica* and *N. gracilis*) are more difficult, and half-grown or still smaller specimens are sometimes impossible to determine with real certainty. — A general view of the male copulatory organs in this genus is given above on p. 80.

The "Siboga" collections contains 3 species, *N. microps* G. O. S., *N. gracilis* n. sp. and *N. tenella* G. O. S. But it may be useful to give an analytical key to the males of all species.

A. First elongated pair of legs with long spines both from the penultimate and the last joint. Inner lobe of the copulatory organs with the proximal process much shorter and less thick than the terminal process . . . . . *N. megalops* G. O. S.

B. First elongated pair of legs with long spines only on the last joint. Inner lobe of copulatory organs with the proximal process either a little thicker and at most a little shorter or, most frequently, much thicker and from somewhat to very much longer than the terminal process.

a. Spine-shaped and terminal processes at least about half as long as the proximal process, the distal outer margin of which is even, not serrated.

α. Proximal process slender, acute, diaphanous, not longer, or even a little shorter, than the terminal process, which considerably overreaches the spine-shaped process. (Eyes in both sexes somewhat smaller than in *N. microps*) . . . . . *N. atlantica* n. sp.

β. Proximal process rather thick, obtuse, generally opaque, considerably longer than the terminal process which is shorter than the spine-shaped process . . . . . *N. microps* G. O. S.

b. Spine-shaped and terminal processes several times shorter than the proximal process, the outer margin of which is serrated towards the end.

α. Lower part of the eyes not smaller than the upper part. Copulatory organs with the terminal process short, but yet longer than the basal diameter of the proximal process. . . . . *N. gracilis* n. sp.

β. Lower part of the eyes much smaller than the upper part. Copulatory organs with the terminal process very short, at most about as long as the basal diameter of the proximal process . *N. tenella* G. O. S.

15. *Nematoscelis microps* G. O. Sars. Pl. XV, figs. 2*a*—2*k*.

1883. *Nematoscelis microps* G. O. Sars, Forh. Vid. Selsk. Christiania for 1883, N° 7, p. 28.
1885. *Nematoscelis microps* G. O. Sars, Challenger Rep. Vol. XIII, p. 131, Pl. XXV, figs. 1—4.
1885. *Nematoscelis rostrata* G. O. Sars, l. c. p. 135, Pl. XXV, figs. 8—10. [Very young specimens].
1905. *Nematoscelis microps* H. J. Hansen, Bull. Mus. Océan. Monaco, N° 30, p. 27, and N° 42, p. 28 [partim, *N. microps* not being separated from *N. atlantica* n. sp.].

Stat. 37. March 30/31. Sailus ketjil, Paternoster-islands. 27 m. and less. Surface. 8 small or very small specimens.
Stat. 118. July 13. Lat. 1° 38′ N., long. 124° 28′.2 E. HENSEN vertical net, from 900 m. to surface. 1 adult male.
Stat. 128. July 22. Lat. 4° 27′ N., long. 125° 25′.7 E. 1645 m. HENSEN vertical net, from 700 m. to surface. 3 immature specimens.
Stat. 141. August 5. Lat. 1° 0′.4 S., long. 127° 25′.3 E. 1950 m. HENSEN vertical net, from 1500 m. to surface. Some young specimens.
Stat. 143. August 7. Lat. 1° 4′.5 S., long. 127° 52′.6 E. 1454 m. HENSEN vertical net, from 1000 m. to surface. 5 specimens (2 adult ♂, 1 adult ♀, 3 immature specimens).
Stat. 148. August 10. Lat. 0° 17′.6 S., long. 129° 14′.5 E. 1855 m. HENSEN vertical net, from 1000 m. to surface. 11 specimens (3 adult ♂, 5 adult ♀, 3 immature specimens).
Stat. 185. September 12. Lat. 3° 20′ S., long. 127° 22′.9 E. HENSEN vertical net, from 1536 m. to surface. 3 specimens (1 adult ♀, 2 immature specimens).

Stat. 189ª. September 12. Lat. 2° 22′ S., long. 126° 46′ E. Townet. Some young specimens.
Stat. 203. September 19. Lat. 3° 32′.5 S., long. 124° 15′.5 E. HENSEN vertical net, from 1500 m. to surface. 6 specimens (1 adult ♂, 4 adult ♀, 1 immature ♂).
Stat. 220. November 1/3. Anchorage off Pasir Pandjang, West coast of Binongka. 278 m. Townet. 23 very small specimens.
Stat. 230. November 14. Lat. 3° 58′ S., long. 128° 20′ E. HENSEN vertical net, from 2000 m. to surface. 2 immature specimens.
Stat. 243. December 2. Lat. 4° 30′.2 S., long. 129° 25′ E. HENSEN vertical net, from 1000 m. to surface. 3 specimens (1 adult ♀, 2 immature specimens).
Stat. 276. January 9. Lat. 6° 47′.5 S., long. 128° 40′.5 E. HENSEN vertical net, from 750 m. to surface. 3 immature specimens (2 very small).

Adult Specimens (figs. 2*a*—2*h*). — To the description given by SARS some points may be added (see besides "Remarks"). In the adult female the carapace has no lateral denticle, and the frontal plate is somewhat short (fig. 2*c*) while the rostrum is long or very long, acute, varying considerably in breadth, being sometimes less than twice as long as broad and badly defined from the plate, sometimes somewhat or much narrower, until four or five times as long as broad and then better defined. In the adult male the carapace has preserved the lateral denticle found in all immature specimens; the frontal plate is short, and the rostrum a quite small, triangular plate broader than long (fig. 2*a*) or, and most frequently, moderately small, very oblong-triangular, reaching rather little beyond the front margin of the ocular segment (fig. 2*b*). The eyes are moderately large, with the lower section as large as, or a little larger than, the upper. The antennulæ in the male — as in all species of the genus — with the two distal peduncular joints much thicker, besides the second joint somewhat shorter and the third much shorter, than in the female; furthermore the basal joint of the lower male flagellum much thickened and furnished with sensory setæ, but the proximal part of the same flagellum is straight. Terminal joint of the elongated legs (fig. 2*d*) three times as long as broad; its longest spine scarcely serrated along a distal part of its posterior margin (fig. 2*e*). Anal process in the male a simple spine, in the female with a small accessory spine or more rarely two such spines from its basal part behind the principal spine.

The copulatory organs afford important characters (figs. 2*f*—2*h*). The spine-shaped process (fig. 2*f*, p^1.) is unusually long, somewhat or even considerably longer than the terminal process (p^2.) and only somewhat shorter than the proximal process (p^3.), which always is considerably longer than the terminal, rather thick and straight or a little curved with the end broadly obtuse and no teeth on the distal part of its outer margin. The lateral process (p^4.) is shaped about as the proximal, but much or very much shorter, varying considerably in length.

Length of the male 14.5—16 mm., of the female 18—20 mm.

Very young Specimens. — Figs. 2*i* and 2*k*, drawn with the same degree of enlargement, show the front part of two such specimens measuring respectively 6.7 and 4.7 mm. in length. The frontal plate and rostrum constitute together a large, broad, triangular plate proportionately much larger than in the adult female. In the adults the elevated part of the carina containing the dorsal organ is quite short and extremely low; in the very small specimen shown in fig. 2*k* this part is an extremely conspicuous, rather large and high crest with the front margin almost vertical and rounded above, while in the somewhat larger specimen shown

in fig. 2*i* this crest is less developed. The lateral margin of the carapace with a conspicuous, acute denticle a little before the posterior end. The two figures show the gradual development of the sections of the eyes; in the smallest specimen (fig. 2*k*) the lower section is several times larger than the upper, while in the other specimen (fig. 2*i*) the difference between the sections is much lesser, the upper section being considerably more developed than in the younger stage. The small specimen has only 4 spines on the terminal joint of the long legs, while 7 are found in the adults. Finally the two figures and fig. 2*c* — an adult female — show the gradual reduction of the spiniform process on the outer distal angle of first antennular joint.

Remarks. — The "Challenger" specimen from the Pacific preserved in the British Museum is the "type" of SARS, and is represented by him in fig. 1, the main figure. The specimens from the "Siboga" belong unquestionably to the same species as that type, but without a renewed examination I cannot decide whether the "Challenger" specimen from the Atlantic belongs to this species or to *N. atlantica* n. sp. As already stated, *N. microps* in my Monaco-papers comprises both species, and sometimes I have numerous specimens of both from the same station. The males of the two species are easily distinguished by their copulatory organs, and both males and especially the females by the feature that the eyes in *N. microps* are conspicuously larger than in *N. atlantica*. From the area explored by the "Siboga" and from the Pacific I have seen no specimens of *N. atlantica* but numerous specimens of *N. microps*, and these specimens agree completely with each other and with specimens from the Atlantic in the size of the eyes and the relative length of the processes on the copulatory organs, but they show much variability in length and shape of the rostrum in both sexes, and while a good deal of this variation is, as already stated, purely individual, still some of it seems to be local variation. Thus the rostrum in the males from the Pacific is longer than in any specimen from the "Siboga", while in most, but not in all, males from the North Atlantic the rostrum is nearly wanting, being still considerably more reduced than in the specimen shown in fig. 2*a*. As already stated, the rostrum of the adult females varies much as to breadth in the "Siboga" specimens, but it is less variable in my specimens from the Pacific, while in females from the Atlantic it is extremely slender.

Distribution. — As stated I have this species both from the Atlantic and the Pacific, but a more special account must be postponed, and nearly all statements on occurrence in the literature are valueless, as this species has been confounded with two other species.

16. *Nematoscelis gracilis* n. sp. Pl. XV, figs. 3*a*—3*g*.

Stat. 118. July 13. Lat. 1° 38′ N., long. 124° 28′.2 E. HENSEN vertical net, from 900 m. to surface. 4 immature or even small specimens. (Probably this species).

Stat. 128. July 22. Lat. 4° 27′ N., long. 125° 25′.7 E. 1645 m. HENSEN vertical net, from 700 m. to surface. 2 specimens (♂ and ♀).

Stat. 141. August 5. Lat. 1° 0′.4 S., long. 127° 25′.3 E. 1950 m. HENSEN vertical net, from 1500 m. to surface. 4 specimens (♀ and immature specimens).

Stat. 143. August 7. Lat. 1° 4′.5 S., long. 127° 52′.6 E. 1454 m. HENSEN vertical net, from 1000 m. to surface. 4 specimens (adult ♀ and subadult specimens).

Stat. 148. August 10. Lat. 0° 17′.6 S., long. 129° 14′.5 E. 1855 m. HENSEN vertical net, from 1000 m. to surface. 12 specimens (♂, ♀ and immature specimens).

Stat. 165. August 22. Anchorage on North-east side of Daram-island (False Pisangs), East coast of Misool. 49 m. Surface. 1 very young specimen.

Stat. 185. September 12. Lat. 3° 20′ S., long. 127 22′.9 E. HENSEN vertical net, from 1536 m. to surface. Many specimens (♂, ♀ and immature specimens).

Stat. 203. September 19. Lat. 3° 32′.5 S., lat. 124° 15′.5 E. HENSEN vertical net, from 1500 m. to surface. 9 specimens (3 ♂, 6 ♀).

Stat. 216. October 30. Lat. 6° 49′ S., long. 122° 43′ E. 2190 m. FOWLER closing net, from 975 to 415 m. 1 specimen (♀ with ovisac).

Stat. 243. December 2. Lat. 4° 30′.2 S., long. 129° 25′ E. HENSEN vertical net, from 1000 m. to surface. 3 specimens (1 ♂, 2 ♀).

Stat. 276. January 9. Lat. 6° 47′.5 S., long. 128° 40′ E. HENSEN vertical net, from 750 m. to surface. 1 adult male.

Description. — Closely allied to *N. microps*, but smaller and more slender. Frontal plate and rostrum in the female (fig. 3*b*) shaped together as a triangle somewhat or slightly less than twice as broad as long, with the major part of the lateral margins somewhat concave; in the male (fig. 3*a*) the same plate is either narrower or shorter. Lateral margin of the carapace in the adult female without any denticle, in the male with at most a mere rudiment of a denticle on each side a little before the posterior end. The eyes as in *N. microps*. Antennulæ in the female (fig. 3*b*) with the two distal peduncular joints a little more robust than in *N. microps*; in the male (fig. 3*a*) these two joints as in *N. microps* shorter and much thicker than in the female. The proximal part of the lower antennular flagellum in the male (fig. 3*a*) is very curious: from the very thick basal joint it is directed outwards, then inwards, then again somewhat outwards and again a little inwards, forming in this way a proximal portion curved semicircularly outwards, while the following part is rather flatly curved. The last joint of the elongated pair of legs less than three times as long as broad (fig. 3*c*), with the largest spine less coarsely serrated than in *N. microps*.

The copulatory organs (fig. 3*d*) with the processes very different from those in *N. microps*. The spine-shaped process is somewhat short, at most about one-third as long as the proximal process, but yet longer than the terminal process which is very short, spine-shaped, a little or somewhat longer than the basal diameter of the process; the last-named process is rather long, somewhat robust, nearly straight, with the end cut off or rounded and a few saw-teeth on the most distal part of the outer margin (fig. 3*e*). Lateral process somewhat shorter than the proximal, with the end feebly serrated (figs. 3*f* and 3*g*).

Length of the male 10.2—11.2 mm., of the female about 12.5 mm.

Remarks. — The males are easily distinguished from those of the other forms by the proximal part of the lower antennular flagellum, besides from *N. microps* (and *N. atlantica*) by quite different relative length of the processes on the inner lobe of the copulatory organs and from *N. tenella* by the eyes. The females are somewhat similar to *N. microps* and *N. atlantica*, but they are more slender and differ especially by having the frontal-rostral plate shorter and broader than in these species.

17. *Nematoscelis tenella* G. O. Sars. Pl. XV, figs. 4*a*—4*m*.

1883. *Nematoscelis tenella* G. O. Sars, Forh. Vid. Selsk. Christiania for 1883, N° 7, p. 28.
1885. *Nematoscelis tenella* G. O. Sars, Challenger Rep. Vol. XIII, p. 133, Pl. XXV, figs. 5—7.

1896. *Nematoscelis mantis* Chun, Bibl. Zoolog. Bd. 7, Heft 19, p. 165, Taf. XII.
1905. *Nematoscelis tenella* H. J. Hansen, Bull. Mus. Océan. Monaco, N° 42, p. 30.

Stat. 42ª. April 7. Lat. 8° 0′.5 S., long. 118° 34′.7 E. 1600 m. Deep-sea trawl. 1 ovigerous ♀.
Stat. 118. July 13. Lat. 1° 38′ N., long. 124° 28′.2 E. HENSEN vertical net, from 900 m. to surface. 1 specimen (♀).
Stat. 128. July 22. Lat. 4° 27′ N., long. 125° 25′.7 E. 1645 m. HENSEN vertical net, from 700 m. to surface. 1 very large, ovigerous female.
Stat. 141. August 5. Lat. 1° 0′.4 S., long. 127° 25′.3 E. 1950 m. HENSEN vertical net, from 1000 m. to surface. 4 specimens (1 adult ♂, 3 immature specimens).
Stat. 143. August 7. Lat. 1° 4′.5 S., long. 127° 52′.6 E. 1454 m. HENSEN vertical net, from 1000 m. to surface. 5 specimens (1 adult ♀, 4 immature specimens).
Stat. 148. August 10. Lat. 0° 17′.6 S., long. 129° 14′.5 E. 1855 m. HENSEN vertical net, from 1000 m. to surface. 4 specimens (2 adult ♂, 1 adult ♀, 1 immature specimen).
Stat. 185. September 12. Lat. 3° 20′ S., long. 127° 22′.9 E. HENSEN vertical net, from 1536 m. to surface. 5 specimens (2 ovigerous ♀, 3 immature specimens).
Stat. 203. September 19. Lat. 3° 32′.5 S., long. 124° 15′.5 E. HENSEN vertical net, from 1500 m. to surface. 6 specimens (1 adult ♂, 5 immature specimens).
Stat. 230. November 14. Lat. 3° 58′ S., long. 128° 20′ E. Plankton. 2 subadult specimens.
Stat. 243. December 2. Lat. 4° 30′.2 S., long. 129° 25′ E. HENSEN vertical net, from 1000 m. to surface. 2 adult males.
Stat. 276. January 9. Lat. 6° 47′.5 S., long. 128° 40′.5 E. HENSEN vertical net, from 750 m. to surface. 2 specimens (1 immature specimen, 1 larva).
Stat. 282. January 15/17. Lat. 8° 25′.2 S., long. 127° 18′.4 E. Anchorage between Nusa Besi and the N.E.-point of Timor. 27—54 m. 1 very young specimen.

Adult Specimens (figs. 4*a*—4*h*). — In the Monaco-paper quoted I gave a nearly full description, consequently it may be sufficient to lay stress on some characters and to add a few remarks, especially on the copulatory organs.

The species is more slender than the preceding forms. The frontal plate with rostrum (figs. 4*a* and 4*b*) about as in *N. gracilis*. Lateral margins of the carapace in adult specimens of both sexes from the "Siboga" without denticles. The eyes dark brown or nearly black, with a lighter transverse band; the upper section is much broader than the lower. In both sexes all three joints of the antennular peduncles conspicuously more slender as compared with the carapace than in the two preceding species, furthermore the two distal peduncular joints considerably thicker and somewhat shorter in the male (fig. 4*a*) than in the female (fig. 4*b*), while the male lower flagellum has its proximal part straight as in *N. microps*. The terminal joint of the elongated pair of legs (fig. 4*c*) is more slender than in the two preceding species, being more than three and a half times as long as broad; its largest spine distally on the posterior margin with the saw-teeth fine and very distant from each other (fig. 4*d*).

The copulatory organs (figs. 4*e* and 4*f*) essentially as in *N. gracilis*, but showing some minor differences. The spine-shaped and the terminal processes are still more reduced, the latter not longer or even shorter than the basal diameter of the proximal process; this last-named process nearly as in *N. gracilis*, but its distal outer margin with more saw-teeth, some of which are large (fig. 4*g*). The lateral process long, not much shorter than the proximal, straight, and its blunt, oblique end adorned with incisions looking as lines and with the margin between them rounded (fig. 4*h*).

Length of the males about 15 mm., of the ovigerous females 15.5—21 mm.

Young Specimens (figs. 4*i*—4*m*). — Figs. 4*i* and 4*k* represent the anterior part of a young female, measuring 10.5 mm. in length, respectively from above and from the side; in the same way figs. 4*l* and 4*m* represent a much younger specimen measuring only 7.2 mm. These figures, as compared with each other and with figs. 4*a* and 4*b* representing adult specimens, show the reduction according to age of the frontal plate with rostrum, the development of the eyes and the small keel containing the dorsal organ (the latter only visible under high magnifying power). As in *N. microps* the frontal plate is extremely large in very small specimens, and during the growth of the animal the plate alters its shape and becomes proportionately much reduced in length. In the specimen measuring 10.5 mm. the upper section of the eyes is distinctly larger than the lower (fig. 4*k*), but the inner dark-coloured portion is lighter and scarcely larger in the upper than in the lower section. In the very small specimen the whole cornea is smaller in proportion to the stalk (fig. 4*m*), the upper section is not very well defined and a little smaller than the lower, while its darker inner part is very much smaller than that in the lower section. The dorsal carina is much lower and less pronounced than in young specimens in the same stage of development of *N. microps*. In these young specimens marginal denticles on the carapace are distinct or even conspicuous.

Remarks. — The specimen in the British Museum marked "type" by Sars was taken South of the Cape of Good Hope; it measures 9 mm. and is a young of the present species. In the adult males from the Atlantic the carapace has a pair of minute denticle on the lower margin rather near the posterior end, but the copulatory organs are similar in specimens from the North Atlantic and from the area explored by the "Siboga".

Distribution. — I have specimens both from the subtropical part of the North Atlantic and from the Pacific.

Nematobrachion Calman.

This genus comprises 2 species, *N. boopis* Calm. and *N. flexipes* Ortm., both established on specimens from the Atlantic. The "Siboga" captured some specimens of the first-named species.

18. *Nematobrachion boopis* Calman.

1896. *Nematodactylus boopis* Calman, Trans. Roy. Irish Acad. Vol. XXXI, p. 17, figs. 19—28.
1905. *Nematobrachion boopis* Calman, Rep. Sea and Inland Fisheries of Ireland, 1902—1903, Part II, App. 4, p. 153; Pl. XXVI.

Stat. 128. July 22. Lat. 4° 27′ N., long. 125° 25′.7 E. 1645 m. Hensen vertical net, from 700 m. to surface. 2 specimens (1 immature and 1 very young).
Stat. 203. September 19. Lat. 3° 32′.5 S., long. 124° 15′.5 E. Hensen vertical net, from 1500 m. to surface. 5 specimens (1 adult ♀, 2 immature and 2 very young specimens).
Stat. 230. November 14. Lat. 3° 58′ S., long. 128° 20′ E. Hensen vertical net, from 2000 m. to surface. 1 young specimen.
Stat. 276. January 9. Lat. 6° 47′.5 S., long. 128° 40′.5 E. Hensen vertical net, from 750 m. to surface. 1 immature specimen.

Stylocheiron G. O. Sars.

This genus comprises 6 hitherto established valid species, viz. *S. carinatum* G. O. Sars, *S. Suhmii* G. O. Sars (= *S. mastigophorum* Chun, partim), *S. longicorne* G. O. Sars, *S. elongatum* G. O. Sars, *S. abbreviatum* G. O. Sars (= *S. chelifer* Chun) and *S. maximum* H. J. H. The "Siboga" collection contains specimens of these species excepting *S. Suhmii* and *S. elongatum* and besides of 3 new species to be described in the sequel; these new species are all related to *S. Suhmii*.

a. Species only with lateral setæ on the penultimate joint of the elongated pair of legs.

19. *Stylocheiron carinatum* G. O. Sars. Pl. XVI, figs. 1 *a*—1 *h*.

1883. *Stylocheiron carinatum* G. O. Sars, Forh. Vid. Selsk. Christiania for 1883, N° 7, p. 31.
1885. *Stylocheiron carinatum* G. O. Sars, Challenger Rep. Vol. XIII, p. 137, Pl. XXVI.

Stat. 16. March 15/16. Lat. 6° 59′ S., long. 115° 24′.7 E. Bay of Kankamaraän, S. coast of Kangeang. 22 m. Vertical net with electric light. 1 specimen.
Stat. 37. March 30/31. Sailus ketjil, Paternoster-islands. 27 m. and less. Surface. 7 specimens.
Stat. 40. April 2. Anchorage of Pulu Kawassang, Paternoster-islands. 12 m. Townet. 1 specimen.
Stat. 66. May 7/8. Bank between islands of Bahuluwang and Tambolungan, South of Saleyer. 8—10 m. Plankton. Several hundreds of specimens.
Stat. 106. July 4. Anchorage off Kapul-island, Sulu-Archipelago. 13 m. Townet. 4 specimens.
Stat. 118. July 13. Lat. 1° 38′.5 N. Long. 124° 28′.2 E. HENSEN vertical net, from 900 m. to surface. 1 specimen.
Stat. 128. July 22. Lat. 4° 27′ N., long. 125° 25′.7 E. HENSEN vertical net, from 700 m. to surface. 6 specimens.
Stat. 129. July 22/23. Anchorage off Kawio- and Kamboling-islands, Karkaralong-group. 23—31 m. Townet. 22 specimens.
Stat. 141. August 5. Lat. 1° 0′.4 S., long. 127° 25′.3 E. 1950 m. HENSEN vertical net, from 1500 m. to surface. 3 specimens.
Stat. 144. August 7/9. Anchorage North of Salomakiëe-(Damar-)island. 45 m. Townet. 8 specimens.
Stat. 157. August 15/16. Lat. 0° 32′.9 S., long. 130° 14′.6 E. 45 m. Townet. 1 specimen.
Stat. 165. August 20/22. Anchorage on North-east side of Daram-island (False Pisangs), East-coast of Misool. 49 m. Townet. 1 specimen.
Stat. 168. August 22/23. Anchorage North of Sabuda-island. Townet, surface. 1 specimen (♀ with eggs).
Stat. 177[a]. September 1. Lat. 2° 30′ S., long. 129° 28′ E. Townet. 2 specimens.
Stat. 184. September 11/12. Anchorage off Kampong Kelang, South coast of Manipa-island. 36 m. Townet, surface. 1 specimen.
Stat. 185. September 12. Lat. 3° 20′ S., long. 127° 22′.9 E. HENSEN vertical net, from 1536 m. to surface. 15 specimens.
Stat. 189[a]. September 12. Lat. 2° 22′ S., long. 126° 46′ E. Townet. 9 specimens.
Stat. 203. September 19. Lat. 3° 32′.5 S., long. 124° 15′.5 E. HENSEN vertical net, from 1500 m. to surface. 30 specimens.
Stat. 225. November 8. 5700 m. N. 279° E. from Southpoint of South-Lucipara-island. Horizontal cylinder. 1 specimen.
Stat. 243. December 2. Lat. 4° 30′.2 S., long. 129° 25′ E. HENSEN vertical net, from 1000 m. to surface. 1 specimen.
Stat. 276. January 9. Lat. 6° 47′.5 S., long. 128° 40′.5 E. HENSEN vertical net, from 750 m. to surface. About 40 specimens.

Description. — The description given by Sars is very elaborate, but some particulars may be added, especially as to the copulatory organs and the antennular flagella, the latter being mutilated in the specimens examined by Sars.

In the female (fig. 1 *e*) the frontal plate is somewhat short and badly defined from the rostrum, which is very long, very oblong-triangular, twice or slightly more than twice as long as broad. In the male (fig. 1 *a*) the frontal plate is a little shorter, the rostrum as much longer and besides a little or considerably narrower, than in the other sex. The proximal joint of the antennular peduncles is similar in both sexes; the two distal peduncular joints in the female (fig. 1 *e*) are very slender, together more than half as long again as the proximal joint, while in the male (figs. 1 *a* and 1 *b*) the two distal joints are very thick, short, each only a little longer than broad and together scarcely as long as the proximal joint. In the male the antennular flagella are 6-jointed, the lower somewhat longer than the upper and a little shorter than the peduncle; in the lower flagellum (fig. 1 *d*) the first joint is conical, very thick at the base and thin at the end, nearly two-thirds as long as the sum of the remaining joints; the second joint is small, and the four distal joints subequal in length, strongly compressed, forming together a very oblong, vertical, leaf-shaped plate with the upper margin serrated and convex, the lower glabrous and nearly straight; in the upper flagellum (fig. 1 *c*) the first joint is somewhat conical, but considerably shorter and much more slender than in the lower, while the four distal joints are much flattened, forming a horizontal plate completely similar to the vertical plate of the lower flagellum, and this plate has the inner margin serrated and convex, the outer glabrous and nearly straight. In the female both flagella have the same number of joints and relative length as in the male, but they are much more slender and besides proportionately shorter, the lower flagellum being shorter than the sum of the two distal peduncular joints; the major part of the upper flagellum is flattened, of the lower flagellum compressed, but in both flagella very much narrower than in the male.

The copulatory organs (figs. 1 *f*—1 *h*), showing the main features of the genus, possess yet some peculiarities. The spine-shaped process (p^1.) is short, bent strongly inwards before the middle. The terminal process is short, flat, very broad (p^2.), about two and a half times as long as broad, with the transverse end crenulated and as broad as at the base, the outer margin margin straight, the inner margin distally convex, proximally concave. The proximal process (p^3.) is flat, distinctly longer than the terminal and at, or beyond, the middle almost twice as broad, being very much expanded on the inner side with the inner margin forming a rounded angle of 80—100°; a comparison between figs. 1 *g* and 1 *h* shows some not inconsiderable individual variation as to the shape and breadth of this process. The lateral process (p^4.) projects from the base of the median lobe close at the proximal process; it is somewhat shorter than the latter, very slender, with the end acute and directed somewhat outwards (towards the lobe) and with a less or more pronounced tooth a little behind the end on the outer margin. The auxiliary lobe has nearly disappeared, but about three hooks are found on or before a minute, protruding part of the margin.

Remarks. This small species is easily separated from other forms by the structure of the elongated pair of legs, which have a high tubercle armed with a spine at the end of the

antepenultimate joint, while the terminal joint is short and furnished with setæ, and the penultimate joint has three strong setæ on the posterior (lower) margin and the first of these near the middle of the joint. When these legs are lost, the species is distinguished by the shape of the rostrum and the eyes, by the antennulæ, the rather broad antennal squama and the very conspicuous dorsal crest on the carapace. The species is somewhat similar to very young specimens of *S. abbreviatum* G. O. Sars, but the latter species has real chelæ, a narrower and longer antennal squama, etc. In vain I have attempted to separate the specimens from the Indian Archipelago, the Pacific and the Atlantic into two or more species: all belong to the same species.

b. Species with the elongated pair of legs terminating in false chelæ, having no real immovable finger but a very long and strong terminal, distally curved spine (and near this two shorter spines) on the penultimate joint. (This division of the genus may be named the *longicorne*-group).

20. *Stylocheiron insulare* n. sp. Pl. XVI, figs. 2*a*—2*i*.

Stat. 118. July 13. Lat. 1° 38′ N., long. 124° 28′.2 E. HENSEN vertical net, from 900 m. to surface. 2 specimens (male and female).
Stat. 141. August 5. Lat. 1° 0′.4 S., long. 127° 25′.3 E. 1950 m. HENSEN vertical net, from 1500 m. to surface. 1 female.
Stat. 143. August 7. Lat. 1° 4′.5 S., long. 127° 52′.6 E. 1454 m. HENSEN vertical net, from 1000 m. to surface. 1 female.
Stat. 185. September 12. Lat. 3° 20′ S., long. 127° 22′.9 E. HENSEN vertical net, from 1536 m. to surface. 2 males.
Stat. 203. September 19. Lat. 3° 32′.5 S., long. 124° 15′.5 E. HENSEN vertical net, from 1500 m. to surface. 1 female.
Stat. 220. November 1/3. Anchorage off Pasir Pandjang, West coast of Binongka. 278 m. Townet. 1 small specimen.
Stat. 243. December 2. Lat. 4° 30′.2 S., long. 129° 25′ E. HENSEN vertical net, from 1000 m. to surface. 2 specimens (1 male and 1 immature female).

Description. — The frontal plate is rather long, in the female (fig. 2*b*) produced into a long, proximally moderately broad, distally thin rostrum; in the male the rostrum is about as long as in the female but somewhat more slender (fig. 2*a*). The keel on the gastric area is not high but yet very distinct, with the anterior part of the upper margin extremely sloping. The eyes (fig. 2*c*) are moderately large, from one-fourth to nearly half as high again as broad, broadly pyriform, with the longer lower part between two and three times as broad as the upper near the end, which, seen from the side, terminates in a row of about 5 facets; the lower part is black excepting its outer layer. In the female the antennular peduncles are distinctly shorter than in the next species, a little shorter than the carapace with rostrum, their third joint about half as long again as the second; both flagella are extremely thin, the upper flagellum is somewhat shorter than the lower which is about as long as the peduncle. In the male (fig. 2*a*) the two distal peduncular joints are considerably shorter and thicker than in the three following species; the upper flagellum is distinctly longer than the peduncle and somewhat shorter than the lower; both flagella are 7-jointed, with the distal half conspicuously expanded,

on the upper flagellum as usually depressed, on the lower compressed; the first joint as usually long, in the upper flagellum somewhat slender, in the lower conical and unusually thick at the base; the second joint is short, the four following joints increase gradually in length, and the sixth joint is as long as, or slightly longer than, the seventh. The antennal squama (fig. 2*d*) is considerably broader than in the three following species, being scarcely seven times as long as broad, with the large terminal lobe beyond the marginal tooth more than half as long again as broad; the squama reaches in the female (fig. 2*b*) at least slightly beyond the middle of third joint of the antennular peduncle, in the male (fig. 2*a*) distinctly beyond the end of the peduncle.

Fig. 2*e* shows one of the false chelæ of the elongated second pair of legs, and the chela may be taken as a type of this organ in the four species of the *longicorne*-group represented in the "Siboga" collection, as the structure is very uniform, showing only a little difference in the length of some of the spines in various species. Thus it may be pointed out that the chelæ of *S. insulare* differ from those in *S. longicorne* mainly in having the proximal spine of the penultimate joint and the two proximal spines at the upper margin of the last joint somewhat but not much shorter than in the last-named species, while the chelæ in *S. microphthalma* n. sp. are intermediate between those in *S. insulare* and *S. longicorne*.

Sixth abdominal segment (figs. 2*f* and 2*g*) shorter and deeper than in the three following species, being only very little longer than the fifth segment and conspicuously less than half as long again as deep, with the lower margin towards the end bent rather or very suddenly upwards. The exopod of the uropods (fig. 2*f*) broader than in the other species of this group and slightly shorter than the endopod, which reaches the insertion of the large distal spines on the telson.

The copulatory organs (figs. 2*h* and 2*i*) show some minor differences from those in the other species of the *longicorne*-group. The spine-shaped process is somewhat long. The terminal process moderately long, flattened, between three and a half times and four times as long as broad, with the distal half distinctly narrower than the proximal, the inner margin somewhat concave, the outer a little convex along the proximal half, the end cut off obliquely. Proximal process about as long and broad as the terminal, decreasing somewhat in breadth along its proximal two-thirds, and with the distal third somewhat expanded on the inner side, the margin of this expansion and the terminal margin together forming one-third of a cercle. The lateral process basally somewhat removed from the proximal, somewhat shorter than and about half as broad as the last-named process, with the inner margin somewhat concave, the outer somewhat convex and at the broad, rounded end a little expanded on the outer side.

Length of the male 6.5 mm., of the female 7—8.2 mm.

Remarks. — This species, of which only the "Siboga" specimens are known to me, is easily distinguished from the three following species of the *longicorne*-group by its much broader antennal squama, which at least in the male reaches longer forward in proportion to the joints of the antennular peduncles than in the following forms. Furthermore the two distal joints in the antennular peduncles of the male are thicker and conspicuously shorter, the eyes broader and the sixth abdominal segment a little deeper with the lower margin more strongly curved towards the end than in the three following species, it being on the whole the most clumsy form of the *longicorne*-group.

21. *Stylocheiron microphthalma* n. sp. Pl. XVI, figs. 3*a*—3*d*.

Stat. 104—108. July 2—5. Ab. Lat. 6° 1′—6° 10′ N., long. 120°—121½° E. Surface. 3 specimens (♀).
Stat. 128. July 22. Lat. 4° 27′ N., long. 125° 25′.7 E. 1645 m. HENSEN vertical net, from 700 m. to surface. 19 specimens (♂, ♀).
Stat. 129. July 22/23. Anchorage off Kawio- and Kamboling-islands, Karkaralong-group. 23—31 m. Townet. 1 specimen (♀).
Stat. 184. September 11/12. Anchorage off Kampong Kelang, South coast of Manipa-island. 36 m. Townet, surface. 1 specimen (♀).
Stat. 276. January 9. Lat. 6° 47′.5 S., long. 128° 40′.5 E. HENSEN vertical net, from 750 m. to surface. 2 specimens (♀).

Description. — Frontal plate rather long, in the female produced into a long, proximally somewhat broad, distally very slender rostrum, while in the male the rostrum is short (fig. 3*a*). The dorsal keel on the gastric area moderately high, anteriorly very sloping (fig. 3*a*). The eyes are small, conspicuously smaller than in *S. insulare* or *S. affine* and much smaller than in *S. longicorne*, somewhat pyriform, from slightly more to somewhat less than twice as high as broad; the upper half is nearly conical with the narrow, obtuse end, seen from the side (fig. 3*a*), showing only two terminal facets; the lower part is dark. Antennulæ in the female nearly as in *S. longicorne*, but the peduncle is only as long as the carapace with the rostrum, and its second joint is longer than in *S. insulare*, shorter than in *S. longicorne* in proportion to the third joint, the latter being one-third or a little more than one-third as long again as the second; the flagella as in *S. affine* (see below). In the male the two distal peduncular joints of the antennulæ are somewhat shorter and much thicker than in the female, shaped nearly as in the male of *S. affine* (fig. 4*a*), consequently conspicuously longer and less thick than in *S. insulare*; furthermore the upper flagellum is distinctly shorter than the peduncle and somewhat shorter than the lower, and both flagella are 8-jointed, with the distal half conspicuously expanded and on the whole similar to those in *S. affine* (see below and fig. 4*a*). The antennal squama (fig. 3*b*) about twelve times as long as broad just behind the marginal tooth, with the terminal lobe beyond that tooth much longer than broad, reaching in the female slightly beyond the middle of third joint in the antennular peduncle, in the male nearly to the end of that joint.

The false chelæ on the end of the long legs nearly as in *S. insulare*, differing mainly by having the proximal spine of the penultimate joint and the two proximal spines at the upper margin of the last joint a little longer than in that species. Sixth abdominal segment (fig. 3*c*) from a little more to a little less than half as long again as deep, with the lower margin curved moderately strongly upwards towards the end, but less strongly than in *S. insulare*. The endopod of the uropods very slightly longer than the exopod, reaching the middle between the end of the telson and the insertion of its distal long spines.

The copulatory organs (fig. 3*d*) show some minor differences in the shape of the three broader processes from those in allied species. The terminal process is not fully three times as long as broad, decreasing somewhat in breadth from the base to near the end, which is broadly rounded on the inner side, while a slightly protruding angle is formed by the outer and the

terminal margin. The proximal process about as long, but not quite as broad at the base, as the terminal, a little sinuate, with the distal half of the inner margin somewhat convex, of the outer feebly concave, while the end at the outer side is produced into a small, oblong process. The lateral process originates near the proximal and is slightly shorter and somewhat narrower, being narrower at the middle than towards both ends, at the distal end broadly rounded on the inner side, while the terminal outer corner is nearly rectangular.

Length of the male 5.5 mm., of the female 6.4 mm.

Remarks. — This small species is easily separated from the other forms of the *longicorne*-group by its small eyes with only two facets on the upper end. The relative length of the distal peduncular joints in the female antennulæ, of the antennal squama in both sexes and the shape of sixth abdominal segment show other differences of specific value.

Distribution. — Specimens from the Pacific are to hand, while the species seems to be wanting in the Atlantic.

22. *Stylocheiron affine* n. sp. Pl. XVI, figs. 4*a*—4*d*.

Stat. 66. May 7/8. Bank between islands of Bahuluwang and Tambolungan, South of Saleyer. 8—10 m. Plankton. 31 specimens, most of them immature.
Stat. 118. July 13. Lat. 1° 38′ N., long. 124° 28′.2 E. HENSEN vertical net, from 900 m. to surface. 1 specimen.
Stat. 129. July 22/23. Anchorage off Kawio- and Kamboling-islands, Karkaralong-group. 23—31 m. Townet. 3 specimens.
Stat. 141. August 5. Lat. 1° 0′.4 S., long. 127° 25′.3 E. 1950 m. HENSEN vertical net, from 1500 m. to surface. 8 specimens.
Stat. 143. August 7. Lat. 1° 4′.5 S., long. 127° 52′.6 E. 1454 m. HENSEN vertical net, from 1000 m. to surface. 4 specimens.
Stat. 148. August 10. Lat. 0° 17′.6 S., long. 129° 14′.5 E. 1855 m. HENSEN vertical net, from 1000 m. to surface. 6 specimens.
Stat. 157. August 15/16. Lat. 0° 32′.9 S., long. 130° 14′.6 E. 45 m. Townet. 1 immature specimen.
Stat. 185. September 12. Lat. 3° 20′ S., long. 127° 22′.9 E. HENSEN vertical net, from 1536 m. to surface. 12 specimens.
Stat. 203. September 19. Lat. 3° 32′.5 S., long. 124° 15′.5 E. HENSEN vertical net, from 1500 m. to surface. 35 specimens.
Stat. 220. November 1/3. Anchorage off Pasir Pandjang, West coast of Binongka. 278 m. Townet. 29 specimens, most of them immature.
Stat. 276. January 9. Lat. 6° 47′.5 S., long. 128° 40′.5 E. HENSEN vertical net, from 750 m. to surface. 19 specimens.

Description. — Frontal plate rather long, in the adult females always terminating in a long or very long, distally very slender rostrum, while the rostrum is short or very short in the adult males. The dorsal keel on the gastric area moderately high, anteriorly very sloping. The eyes are conspicuously lower than in *S. longicorne*, less than twice as high as broad, somewhat pyriform, with the lower section from more than half as broad again to more than twice as broad as the upper part, in which, seen from the side, 4 or 5, rarely 6, crystal cones are plainly observed; the lower, broad section is dark brown. The antennulæ in the female nearly as in *S. longicorne*, but scarcely as long; the peduncle at least as long as the carapace,

with the two distal joints very slender and the third conspicuously longer than, but not one-third as long again as, the second; the upper flagellum is slightly shorter than the lower and about as long as the peduncle, and both flagella are extremely slender, 8-jointed. In the male antennulæ (figs. 4*a* and 4*b*) the two distal peduncular joints are somewhat shorter and much thicker than in the female; the upper flagellum is about as long as the peduncle and conspicuously shorter than the lower; the distal half of both flagella is distinctly flattened and sometimes even conspicuously expanded, the lower flagellum being compressed, the upper depressed, and in such flagella the joints are much easier to count than in the female; each flagellum is 8-jointed, with the first joint long, the second short and the others increasing in length to the last; besides the first joint of the lower flagellum is longer than that of the upper and much thickened towards the base, with the usual sensory filaments. The antennal squama is long and very narrow, 13—14 times as long as broad a little behind the base of the marginal tooth, with a terminal lobe about as long as, or longer than, broad.

The false chelæ of the long legs nearly as in *S. insulare*, mainly differing in having the proximal spine on the penultimate joint and the proximal spines on the upper margin of the terminal joint somewhat but not much longer than in that species. Sixth abdominal segment from considerably less to a little more than half as long again as deep, with the lower margin rounded somewhat flatly towards the end. The endopod of the uropods is distinctly a little longer than the exopod, reaching about to the middle between the end of the telson and the insertion of the distal long spines.

The copulatory organs (figs. 4*c* and 4*d*) are rather similar to those in the other species of the group. The spine-shaped process is somewhat long, strongly bent inwards before the middle. The terminal process is moderately short, with the rather short basal part directed obliquely outwards, forming at the inner side an obtuse angle with the major distal part which proximally is less broad, but increases again somewhat in breadth towards the end, and here the inner margin is convex and rounded, the outer obliquely cut with two or three saw-teeth. The proximal process is about as long and broad as the terminal, but its proximal part is not bent, at the middle it is somewhat narrowed, while it is widened again towards the distal end, at which the inner and the terminal margins are a continuous curve, the outer margin straight. The lateral process, which is inserted close at the base of the proximal, has almost exactly the same shape, but is somewhat shorter and distinctly more than half as broad. It may be added that all three processes are distally plate-shaped and, seen from in front, even somewhat spoon-shaped, as the real distal inner and terminal margin is bent somewhat forwards. The auxiliary lobe is minute.

Length of the male 6 mm., of the female 7—8 mm.

Remarks. — This species is allied to *S. longicorne* G. O. Sars (see below), but it is still more similar to *S. Suhmii* G. O. Sars (= *S. mastigophorum* Chun, partim). Of *S. Suhmii* I have examined the type from the Pacific (North of New Guinea) in the British Museum, some other specimens from the Pacific and a fairly good number from the North Atlantic; all these specimens — when adult — agree with each other in having the upper part of the eyes distinctly narrower and, seen from the side, with only three well developed crystal cones in a

transverse row, while every adult specimen of the fine "Siboga" material of *S. affine* has 4—5 crystal cones in the row, and no adult specimen with 3 cones is found in the "Siboga" collection. Though that character may seem to be small, I have thought it advisable to establish a new species on the "Siboga"-specimens instead of referring them as a variety to *S. Suhmii*. — According to CHUN's description and figures of the eyes in his *S. mastigophorum* this author has evidently mixed together specimens of *S. Suhmii* G. O. S. and *S. longicorne* G. O. S.

23. *Stylocheiron longicorne* G. O. Sars. Pl. XVI, figs. 5*a*—5*b*.

1883. *Stylocheiron longicorne* G. O. Sars, Forh. Vid. Selsk. Christiania for 1883, N^0 7, p. 32.
1885. *Stylocheiron longicorne* G. O. Sars, Challenger Rep. Vol. XIII, p. 144, Pl. XXVII, fig. 5.

Stat. 118. July 13. Lat. 1° 38′ N., long. 124° 28′.2 E. HENSEN vertical net, from 900 m. to surface. 10 specimens.
Stat. 128. July 22. Lat. 4° 27′ N., long. 125° 25′.7 E. 1645 m. HENSEN vertical net, from 700 m. to surface. 1 specimen.
Stat. 141. August 5. Lat. 1° 0′.4 S., long. 127° 25′.3 E. 1950 m. HENSEN vertical net, from 1500 m. to surface. 2 specimens.
Stat. 143. August 7. Lat. 1° 4′.5 S., long. 127° 52′.6 E. 1454 m. HENSEN vertical net, from 1000 m. to surface. 5 specimens.
Stat. 185. September 12. Lat. 3° 20′ S., long. 127° 22′.9 E. HENSEN vertical net, from 1536 m. to surface. 22 specimens.
Stat. 203. September 19. Lat. 3° 32′.5 S., long. 124° 15′.5 E. HENSEN vertical net, from 1500 m. to surface. 39 specimens.
Stat. 220. November 1/3. Anchorage off Pasir Pandjang, West coast of Binongka. 278 m. Townet. 1 specimen.
Stat. 243. December 2. Lat. 4° 30′.2 S., long. 129° 25′ E. HENSEN vertical net, from 1000 m. to surface. 2 specimens.
Stat. 276. January 9. Lat. 6° 47′.5 S., long. 128° 40′.5 E. HENSEN vertical net, from 750 m. to surface. 3 specimens.

Description. — The frontal plate is a rather long triangle frequently without any rostrum but with the tip acute or subacute, frequently terminating in a long or very long and distally extremely thin rostrum. The dorsal keel on the gastric area somewhat low. Eyes very high (fig. 5*a*), somewhat more than twice as high as broad below the middle, with the upper third nearly as broad as, or, in large females, sometimes even broader than, the lower third; the lower portion not much darker than the upper. In the female antennulæ the peduncles are longer than the carapace but otherwise shaped as in *S. affine*; the lower flagellum is slightly longer than the upper and both are extremely thin. In the male antennulæ the peduncles are shaped completely as in *S. affine*; the upper flagellum is a little longer than the peduncle and somewhat shorter than the lower; both peduncles are thicker than in the female, yet very slender in the whole length excepting the much thickened, very oblong-conical basal joint of the lower peduncle. Antennal squama nearly as in *S. affine*, 13 to 15 times longer than broad a little behind the base of the marginal tooth, in the female reaching a little beyond the distal end of the second antennular joint, and in the male to the middle of third joint.

The false chelæ of the long legs as in *S. affine*. Sixth abdominal segment from half as long again to more than twice as long as deep, with the lower margin rounded flatly upwards

towards the end. The uropods reach nearly the end of telson and their rami are about equal in length.

The copulatory organs (fig. 5*b*) show some minor differences from those of *S. affine*. The terminal process is a little more than three times as long as broad, with its basal third somewhat broader than the next third but without any real angle between these two parts; the terminal part is somewhat widened, spoon-shaped, seen from behind broadly rounded, seen from in front the terminal and a short part of the lateral margin are curved forwards and furnished with about 6 saw-teeth; as the whole distal part is diaphanous these teeth are visible through the skin when seen from behind as in fig. 5*b*. The proximal process is a little shorter and distinctly narrower than the terminal, and shaped as in *S. affine*. The lateral process at the base a little removed from the proximal process and besides much shorter and less than half as broad; it is somewhat sinuate, not expanded distally and there cut off very obliquely on the outer side.

Length of the male 6.5—9.5 mm., of the female almost 13 mm.

Remarks. — The antennular peduncles and flagella are a little longer and more slender than in the two preceding species, and the same is the case with the sixth abdominal segment, but the best character is the shape of the eyes. In the specimens from the "Siboga" they are proportionately light and less or more reddish or yellowish, with the lower third somewhat darker and the median third quite light, lighter than the upper part. In numerous specimens from the Monaco collection they are much darker, but that may be due to the excellent state of preservation. — A specimen from Stat. 203 has an Epicarid attached to the upper side of the ocular segment beneath the frontal plate.

Distribution. — The "Challenger" specimen was taken South of the Cape of Good Hope; SARS mentions that he had some specimens from the Mediterranean, and in the Atlantic it has been taken as far northwards as South of Iceland: lat. 63°08′ N., long. 21°30′ W. Besides I have specimens from the Pacific.

c. Species with the elongated pair of legs terminating in real chelæ with a well developed immovable finger from the penultimate joint.

24. *Stylocheiron maximum* H. J. H. Pl. XVI, figs. 6*a*—6*d*.

1908. *Stylocheiron maximum* H. J. Hansen, The Danish Ingolf-Expedition, Vol. III, 2. Crust. Malac. I, p. 92.

Stat. 128. July 22. Lat. 4°27′ N., long. 125°25′.7 E. 1645 m. HENSEN vertical net, from 700 m. to surface. 1 adult female.

Stat. 141. August 5. Lat. 1°0′.4 S., long. 127°25′.3 E. 1950 m. HENSEN vertical net, from 1500 m. to surface. 1 very young specimen.

(Stat. 243. December 2. Lat. 4°30′.2 S., long. 129°25′ E. HENSEN vertical net, from 1000 m. to surface. 1 very young specimen, probably this species.)

Description. — This large species is closely allied to *S. abbreviatum* G. O. Sars; in the paper quoted I pointed out the two most conspicuous differences between both forms, and the passage in question may be reproduced here.

"In adult and subadult specimens of *S. maximum* the eyes have the upper section slightly or at most a little smaller than the lower; besides, the fourth and fifth abdominal segments have no median dorsal tooth. In adult and subadult specimens of *S. abbreviatum* the eyes have their upper section much smaller than the lower, and the fourth and fifth abdominal segments each a conspicuous dorsal median tooth from the hind margin. In half-grown or still somewhat smaller specimens of *S. abbreviatum* the abdominal armature mentioned is feebly developed, and the upper section of the eyes is proportionately still smaller than in larger specimens; in small specimens of *S. maximum* the eyes have their upper section somewhat smaller as compared with the lower than in large specimens, but that section is yet conspicuously larger than in the other species".

As the material collected by the "Siboga" contains only a single adult specimen of *S. maximum* and only immature specimens of *S. abbreviatum* a more detailed account is to be postponed, but still a few differences between them may be mentioned. *S. maximum* is conspicuously larger than *S. abbreviatum*; the adult female captured by the "Siboga" measures 24 mm. in length, while the male from the North-Atlantic mentioned in the "Ingolf" Report is 23.5 mm. long; fig. 6*a* shows the head and figs. 6*c* and 6*d* the left copulatory organ of the latter specimen. The chela (fig. 6*b*) of *S. maximum* is shaped as in *S. abbreviatum*, but it is proportionately larger than in this species. Finally the copulatory organs. In *S. maximum* the spine-shaped process is strongly bent before or at the middle (fig. 6*d*); the terminal process is thick, decreasing somewhat in breadth from the base to near the middle, and then keeping the same breadth to near the end, which is cut off obliquely and besides with a small or inconspicuous tooth on the terminal margin, while the outer angle is triangularly produced and terminates in an acute tip; the proximal process, which projects from the outer side of the lobe at some distance from the terminal, is about as long as and somewhat less strong than this process, while the lateral process, which is inserted on the inner margin of the median lobe a little from its base, is somewhat short and much more slender than the proximal process. In *S. abbreviatum* the terminal process is essentially as in *S. maximum*, but tapering somewhat in breadth to rather near the end which is distinctly bifid, while the proximal process is scarcely one-third as thick as the terminal and slightly thicker than the lateral process; in other respects all processes in *S. abbreviatum* are about as in *S. maximum*, but the great difference in the thickness of the proximal process is evidently an excellent specific character.

Distribution. — Of *S. maximum* I have seen specimens from the Pacific, and in the Atlantic it goes as far northwards as lat. 61° 49′ N., where it was captured by the "Thor".

25. *Stylocheiron abbreviatum* G. O. Sars.

1883. *Stylocheiron abbreviatum* G. O. Sars, Forh. Vid. Selsk. Christiania for 1883, N⁰ 7, p. 33.
1885. *Stylocheiron abbreviatum* G. O. Sars, Challenger Rep. Vol. XIII, p. 147, Pl. XXVII, figs. 11—13.
1896. *Stylocheiron chelifer* Chun, Bibl. Zool. Heft. 19, p. 162, Taf. XI, Fig. 1—8.

Stat. 128. July 22. Lat. 4° 27′ N., long. 125° 25′.7 E. 1645 m. HENSEN vertical net, from 700 m. to surface. 1 young specimen.

Stat. 141. August 5. Lat. 1° 0′.4 S., long. 127° 25′.3 E. 1950 m. HENSEN vertical net, from 1500 m. to surface. 15 specimens (1 specimen more than half-grown, the others very small).

Stat. 148. August 10. Lat. 0° 17′.6 S., long. 129° 14′.5 E. 1855 m. HENSEN vertical net, from 1000 m. to surface. 2 young specimens.

Stat. 203. September 19. Lat. 3° 32′.5 S., long. 124° 15′.5 E. HENSEN vertical net, from 1500 m. to surface. 7 young specimens.

Stat. 220. November 1/3. Anchorage off Pasir Pandjang, West coast of Binongka. 278 m. Townet. 2 very young specimens.

Stat. 276. January 9. Lat. 6° 47′.5 S., long. 128° 40′.5 E. HENSEN vertical net, from 750 m. to surface. 1 very young specimen.

Remarks. — The essential differences between this species and *S. maximum* H. J. H. were mentioned above. SARS described and figured young specimens, measuring 8 mm., only about half the length of the adults; CHUN examined larger specimens measuring 12—14 mm. and gave a large figure of the female measuring 12—14 mm., but his figure and description of the copulatory organs show that his male specimen was not quite adult. His figure of the female conveys a good idea of the species, but it may be noted that a dorsal tooth similar to that indicated by him on the fifth abdominal segment ought to have been added on the fourth segment. The list above shows that the "Siboga" captured only rather young and very young specimens; for this reason a more detailed account with analytical figures is not given here.

Distribution. — Most of the localities enumerated in the literature are of no value, because the authors did not perceive that it is necessary to separate *S. maximum* from the present species. I have seen specimens of *S. abbreviatum* both from the Atlantic (the Monaco collection) and the Pacific.

EXPLANATION OF THE PLATES

PLATE I.

Fig. 1. *Lophogaster intermedius* n. sp.

Fig. 1*a*. Front part of an adult male from Stat. 166; × 8. The major part of the outer flagella of the antennulæ and antennæ and the granulation on the carapace omitted.
Fig. 1*b*. Left antenna of a female, from below; × 14. The major part of the flagellum omitted.
Fig. 1*c*. Posterior part of abdomen with left uropod of a male, from above; × 8.
Fig. 1*d*. Posterior part of telson of the same male, from above; × 34.
Fig. 1*e*. Posterior part of telson of a female, from above; × 34.

Fig. 2. *Paralophogaster glaber* n. gen., n. sp.

Fig. 2*a*. Anterior part of an adult female from Stat. 253; × 8. Distal part of the outer flagella of the antennulæ omitted.
Fig. 2*b*. Head of the same specimen, from below; × scarcely 10. The front lateral parts of the carapace, labrum, mandibles with their palps and the proximal parts of the antennæ are shown.
Fig. 2*c*. Frontal plate of the half-grown specimen from Stat. 166, from above; × 20.
Eig. 2*d*. Left mandible of the half-grown specimen, from below; × 31.
Fig. 2*e*. Distal part of the mandible shown in fig. 2*d*, from below; × 86.
Fig. 2*f*. Left maxillula of the half-grown specimen, from below; × 53.
Fig. 2*g*. Left maxilla of the half-grown specimen; from below; × 53.
Fig. 2*h*. Left maxilliped of the half-grown specimen, from below; × 31.
Fig. 2*i*. Distal part of second joint with endopod of the same maxilliped; × 53.
Fig. 2*k*. Fourth, fifth and sixth abdominal segments with telson and left uropod of the half-grown specimen, from the left side; × scarcely 10. The major part of the two posterior pleopods omitted.
Fig. 2*l*. Telson of an adult female, from above; × 15.
Fig. 2*m*. Distal part of the same telson; × 30.
Fig. 2*n*. Terminal plate of the same telson; × 72.

Fig. 3. *Eucopia unguiculata* Will-Suhm.

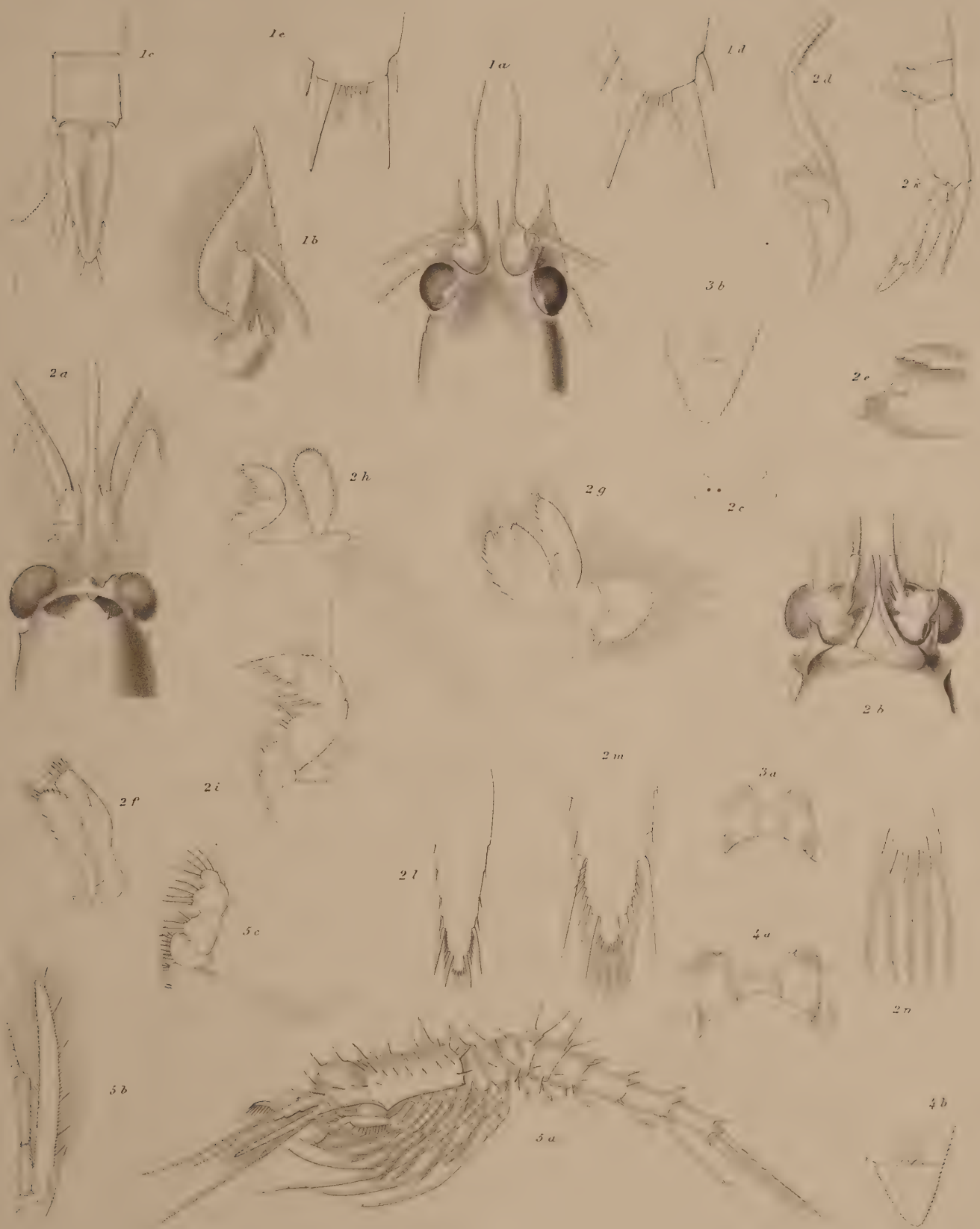
Fig. 3*a*. Front end of the head with eye-stalks of an adult female from Stat. 211, from above; × 8.
Fig. 3*b*. Distal part of the exopod of the left uropod of the same specimen, from above; × 15.

Fig. 4. *Eucopia major* n. sp.

Fig. 4*a*. Front end of the head with eye-stalks of the adult female from Stat. 134, from above; × 7.
Fig. 4*b*. Distal part of the exopod of the left uropod of the same specimen, from above; × scarcely $^{17}/_{2}$.

Fig. 5. *Ceratomysis egregia* n. sp.

Fig. 5*a*. Immature female, from Stat. 88; × scarcely $^{9}/_{2}$.
Fig. 5*b*. Major part of right antenna of the adult male, from above; × $^{23}/_{3}$.
Fig. 5*c*. Left maxilliped of the immature female, from below; × 11.



1. Lophogaster intermedius n. sp. 2. Paralophogaster glaber n. gen., n. sp. 3. Eucopia unguiculata W-Suhm

4. E major n. sp. 5. Ceratomysis egregia n. sp.

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PLATE II.

Fig. 1. *Ceratomysis egregia* n. sp. (continued).

Fig. 1*a*. Anterior part of the adult male from Stat. 45; × 5. *os.* ocular segment.
Fig. 1*b*. Left gnathopod of the immature female, from below; × 11.
Fig. 1*c*. Terminal part of sixth abdominal segment with telson and left uropod of the immature female, from above; × $^{29}/_{4}$.
Fig. 1*d*. Terminal part of the telson shown in the preceding figure; × 18.

Fig. 2. *Boreomysis plebeja* n. sp.

Fig. 2*a*. Anterior part of the immature female; × 22. The major part of the flagella omitted.
Fig. 2*b*. Same head from the left side; × 22.
Fig. 2*c*. Right antennal squama, from above; × 35.
Fig. 2*d*. Telson, from above; × 33.

Fig. 3. *Boreomysis Sibogæ* n. sp.

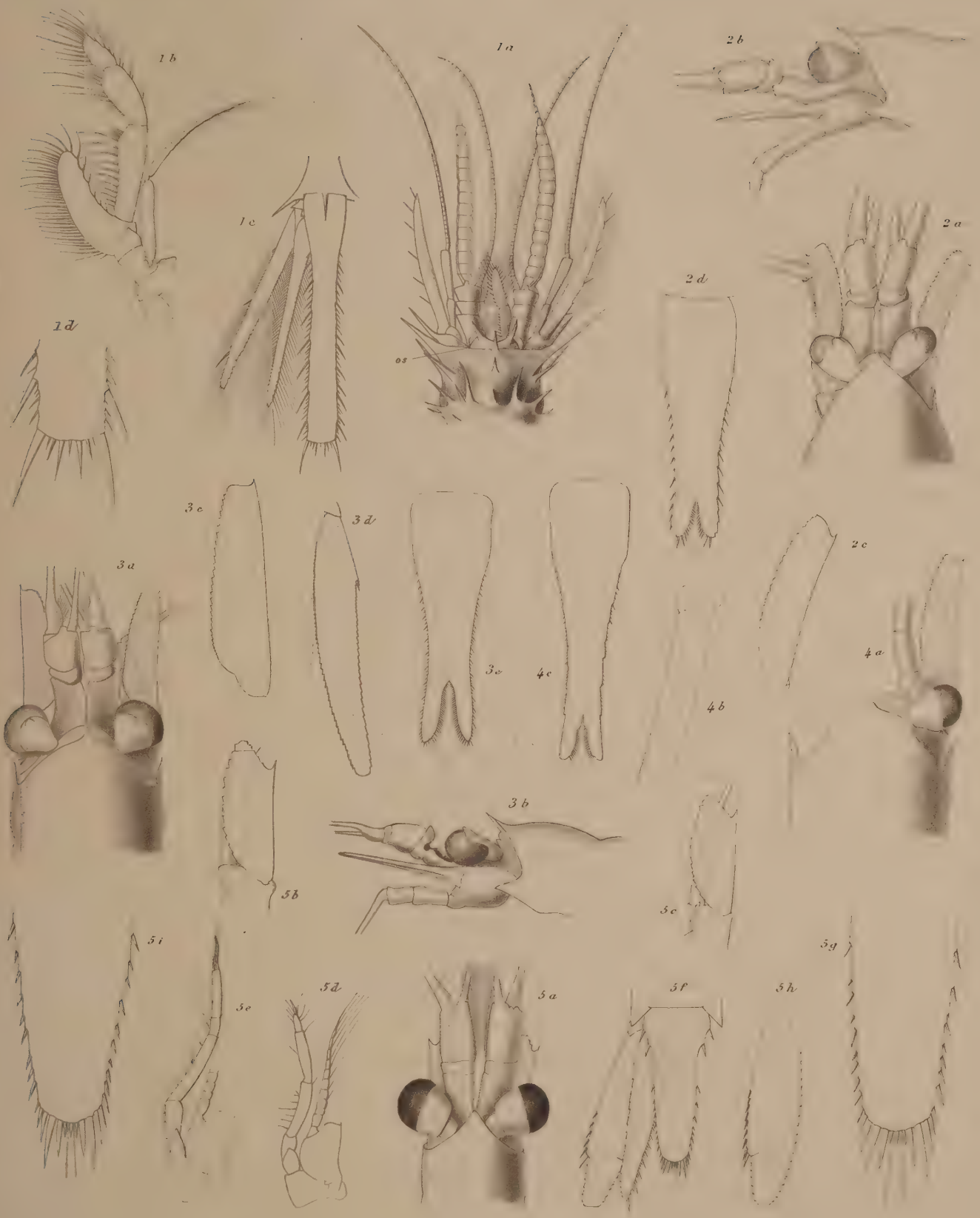
Fig. 3*a*. Anterior part of the adult (?) male; × 11.
Fig. 3*b*. Same head, from the left side; × 11.
Fig. 3*c*. Right antennal squama of the largest specimen, a female with the marsupium half developed, from above; × 15.
Fig. 3*d*. Exopod of the right uropod of the largest specimen, from above; × 11.
Fig. 3*e*. Telson of the largest specimen, from above; × 13.

Fig. 4. *Boreomysis inermis* n. sp.

Fig. 4*a*. Front part of carapace, right eye and major part of right antenna of an adult male, from above; × 16.
Fig. 4*b*. Part of the right uropod, showing the major portion of the exopod, from below; × 20.
Fig. 4*c*. Telson, from above; × 20.

Fig. 5. *Siriella quadrispinosa* n. sp.

Fig. 5*a*. Anterior part of a male; × 23.
Fig. 5*b*. Major part of right antenna of a male, from above; × 35.
Fig. 5*c*. Major part of right antenna of a female, from above; × 35.
Fig. 5*d*. Left gnathopod of a female, from below; × 35.
Fig. 5*e*. Left first thoracic leg of the same specimen, from below; × 35.
Fig. 5*f*. End of sixth abdominal segment with telson and left uropod of an adult female; × 35.
Fig. 5*g*. Distal part of the telson of the same female, from above; × 84.
Fig. 5*h*. Exopod of left uropod of an adult male, from above; × 35.
Fig. 5*i*. Distal part of the telson of an adult male, from above; × 84.



1. Ceratomysis egregia n. sp. 2. Boreomysis plebeja n. sp. 3. B. Sibogæ n. sp.

4. B. inermis n. sp. 5. Striella quadrispinosa n. sp.

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PLATE III.

Fig. 1. *Siriella nodosa* n. sp.

Fig. 1*a*. Anterior part of a male; × 33.
Fig. 1*b*. Cephalothorax of a female, from the left side; × 21. Anterior part of marsupium omitted.
Fig. 1*c*. Major part of right antenna of a female, from above; × 55.
Fig. 1*d*. Left gnathopod of a female, from below; × 29.
Fig. 1*e*. Left first thoracic leg of the same female, from below; × 29.
Fig. 1*f*. Left second thoracic leg of the same female, from below; × 29.
Fig. 1*g*. Left third thoracic leg of the same female, from below; × 29. Exopod wholly omitted.
Fig. 1*h*. End of sixth abdominal segment with telson and left uropod of a female, from above; × 52.
Fig. 1*i*. Distal part of the female telson shown in the preceding figure, from above; × 100.
Fig. 1*k*. End of sixth abdominal segment with telson and left uropod of an adult male, from above; × 35.
Fig. 1*l*. Distal part of the male telson shown in fig. 1*k*, from above; × 70.

Fig. 2. *Siriella vulgaris* n. sp.

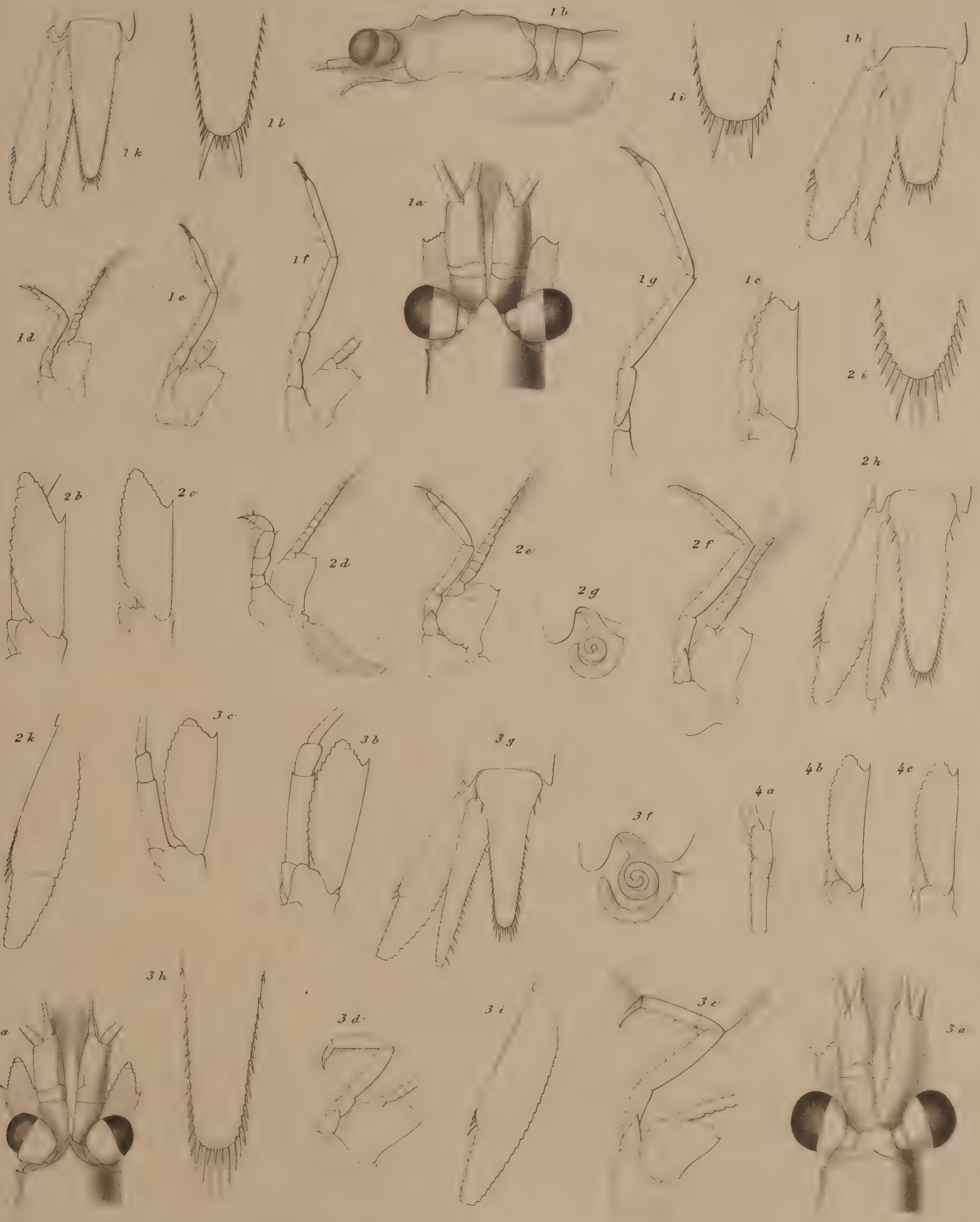
Fig. 2*a*. Anterior part of an adult male from Stat. 282; × 24.
Fig. 2*b*. Major part of right antenna of a male, from above; × 37.
Fig. 2*c*. Major part of right antenna of an adult female, from above; × 37.
Fig. 2*d*. Left maxilliped of an adult female, from below; × 37.
Fig. 2*e*. Left gnathopod of the same female, from below; × 37.
Fig. 2*f*. Left first thoracic leg of the same female, from below; × 37.
Fig. 2*g*. Pseudobranchia of second right male pleopod, from behind; × 52.
Fig. 2*h*. End of sixth abdominal segment with telson and left uropod of an adult female, from above; × 37.
Fig. 2*i*. Distal part of the female telson shown in fig. 2*h*, from above; × 78.
Fig. 2*k*. Exopod of left uropod of an adult male, from above; × 37.

Fig. 3. *Siriella affinis* n. sp.

Fig. 3*a*. Anterior part of an adult male; × 23.
Fig. 3*b*. Major part of right antenna of a male, from above; × 39.
Fig. 3*c*. Major part of right antenna of an adult female, from above; × 39.
Fig. 3*d*. Left gnathopod of an adult female, from below; × 36.
Fig. 3*e*. Left first thoracic leg of the same female, from below; × 36.
Fig. 3*f*. Pseudobranchia of second right male pleopod, from behind; × 60.
Fig. 3*g*. End of sixth abdominal segment with telson and left uropod of an adult female, from above; × 39.
Fig. 3*h*. Distal part of the female telson shown in fig. 3*g*, from above; × 76.
Fig. 3*i*. Exopod of left uropod of an adult male, from above; × 39.

Fig. 4. *Siriella æquiremis* n. sp.

Fig. 4*a*. Right antennula of a female, from above; × 24.
Fig. 4*b*. Major part of right antenna of a male, from above; × 24.
Fig. 4*c*. Major part of right antenna of an adult female, from above; × 24.



1. Siriella nodosa n. sp. 2. S. vulgaris n. sp. 3. S. affinis n. sp. 4. S. aquiremis n. sp.

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PLATE IV.

Fig. 1. *Siriella æquiremis* n. sp. (continued).

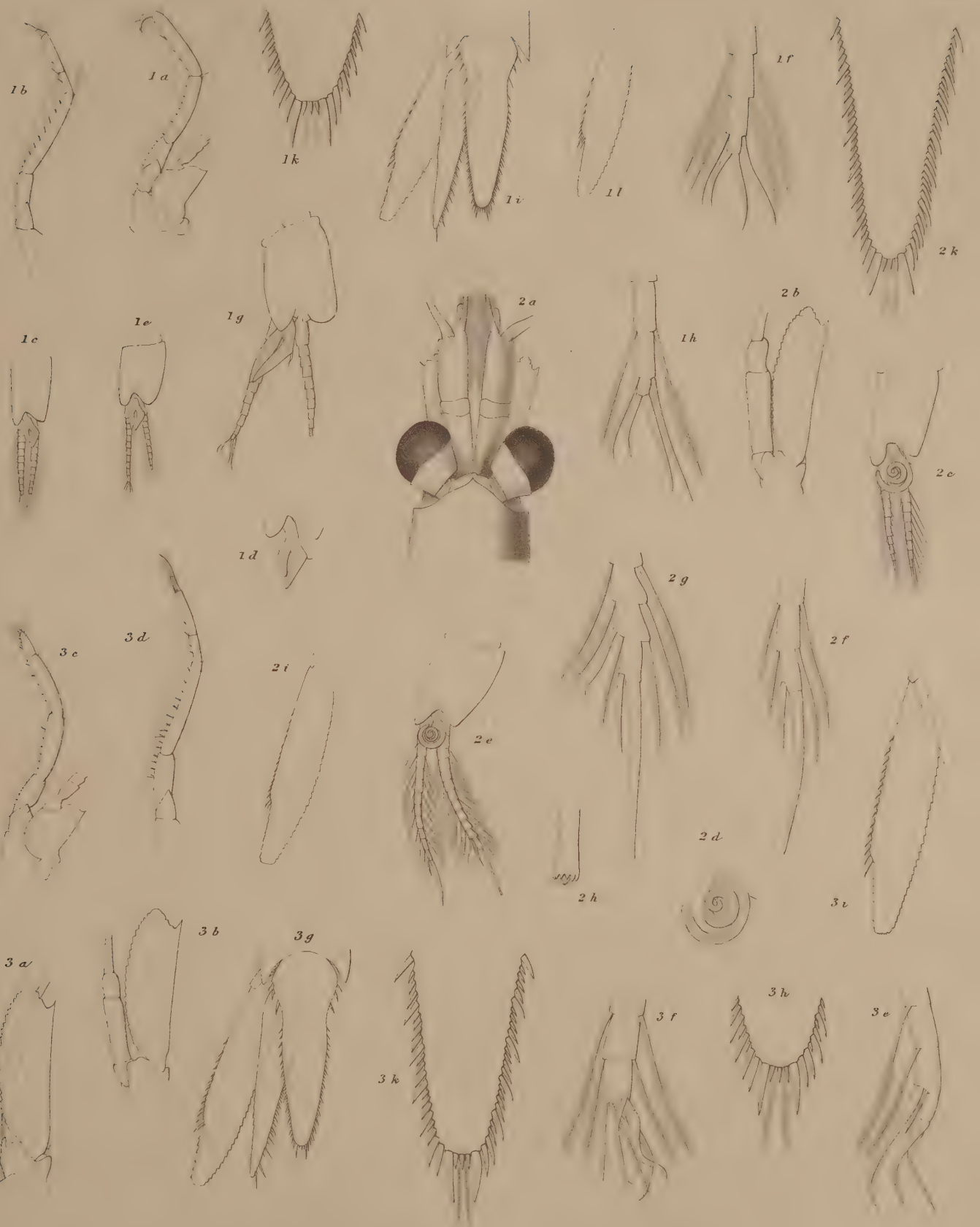
Fig. 1*a*. Left gnathopod of an adult female, from below; × 24.
Fig. 1*b*. Endopod of first thoracic leg of the same female; × 24.
Fig. 1*c*. Second right male pleopod, from behind; × 24.
Fig. 1*d*. Pseudobranchia of the same pleopod, from behind; × 48.
Fig. 1*e*. Fourth right pleopod of an adult male from Stat. 194—197, from behind; × 24.
Fig. 1*f*. Distal part of the endopod of the pleopod shown in fig. 1*e*, from behind; × 144.
Fig. 1*g*. Fourth right pleopod of an adult male from Stat. 35, from behind; × 26. The lateral setæ of the endopod and all setæ of the exopod omitted.
Fig. 1*h*. Distal part of the endopod of the pleopod shown in fig. 1*g*, from behind; × 95.
Fig. 1*i*. End of sixth abdominal segment with telson and left uropod of a female, from above; × 24.
Fig. 1*k*. Distal end of the female telson shown in fig. 1*i*, from above; × 70.
Fig. 1*l*. Exopod of left uropod of an adult male, from above; × 24.

Fig. 2. *Siriella inornata* n. sp.

Fig. 2*a*. Anterior part of an adult male from Stat. 37; × 14.
Fig. 2*b*. Major part of right antenna of a male, from above; × 24.
Fig. 2*c*. Second right pleopod of a male, from behind; × 24.
Fig. 2*d*. Pseudobranchia of the pleopod shown in the preceding figure, from behind; × 43.
Fig. 2*e*. Fourth right pleopod of a male, from behind; × 24.
Fig. 2*f*. Distal part of the endopod of the pleopod shown in fig. 2*e*, from behind; × 84.
Fig. 2*g*. Distal part of the exopod of the pleopod shown in fig. 2*e*, from behind; × 84.
Fig. 2*h*. Distal part of the terminal spine of the exopod of the pleopod shown in fig. 2*e*; × 336.
Fig. 2*i*. Exopod of left uropod of a male, from above; × 24.
Fig. 2*k*. Distal part of telson of a male, from above; × 78.

Fig. 3. *Siriella media* n. sp.

Fig. 3*a*. Major part of right antenna of a male from Stat. 37, from above; × 24.
Fig. 3*b*. Major part of right antenna of a female from Stat. 37, from above; × 24.
Fig. 3*c*. Left gnathopod of a female, from below; × 24.
Fig. 3*d*. Left first thoracic leg of the same female, from below; × 24.
Fig. 3*e*. Distal part of the endopod of fourth right male pleopod, from the outer side; × 100.
Fig. 3*f*. Distal part of the exopod of fourth right male pleopod, from behind; × 100.
Fig. 3*g*. End of sixth abdominal segment with telson and left uropod of a female, from above; × 24.
Fig. 3*h*. Distal part of the female telson shown in fig. 3*g*, from above; × 72.
Fig. 3*i*. Exopod of left uropod of a male, from above; × 24.
Fig. 3*k*. Distal part of telson of a male, from above; × 78.



1. Siriella æquiremis n. sp. 2. S. inornata n. sp. 3. S. media n. sp.

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PLATE V.

Fig. 1. *Siriella anomala* n. sp.

Fig. 1*a*. Major part of right antenna of a male from Stat. 37; × 24.
Fig. 1*b*. Major part of right antenna of a female from Stat. 37; × 24.
Fig. 1*c*. Left gnathopod of the same female, from below; × 24.
Fig. 1*d*. Endopod of left first thoracic leg of the same female, from below; × 24.
Fig. 1*e*. Second right male pleopod, from behind; × 24.
Fig. 1*f*. Third right male pleopod, from behind; × 24.
Fig. 1*g*. Distal part of the endopod of third right pleopod, from behind; × 92.
Fig. 1*h*. Distal part of the endopod of fourth right male pleopod, from behind; × 92.
Fig. 1*i*. End of sixth abdominal segment with telson and left uropod of a female, from above; × 24.
Fig. 1*k*. Distal end of the female telson shown in fig. 1*i*, from above; × 72.
Fig. 1*l*. Exopod of left uropod of an adult male, from above; × 24.

Fig. 2. *Siriella distinguenda* n. sp.

Fig. 2*a*. Major part of the right antenna of a male from Stat. 41, from above; × 24.
Fig. 2*b*. Fourth right pleopod of the same male, from behind; × 24.
Fig. 2*c*. Distal part of the endopod of the pleopod shown in fig. 2*b*, from behind; × 124.
Fig. 2*d*. Exopod of left uropod of the same male, from above; × 32.
Fig. 2*e*. Distal part (nearly half) of the telson of the same male, from above; × 83.

Fig. 3. *Siriella conformalis* n. sp.

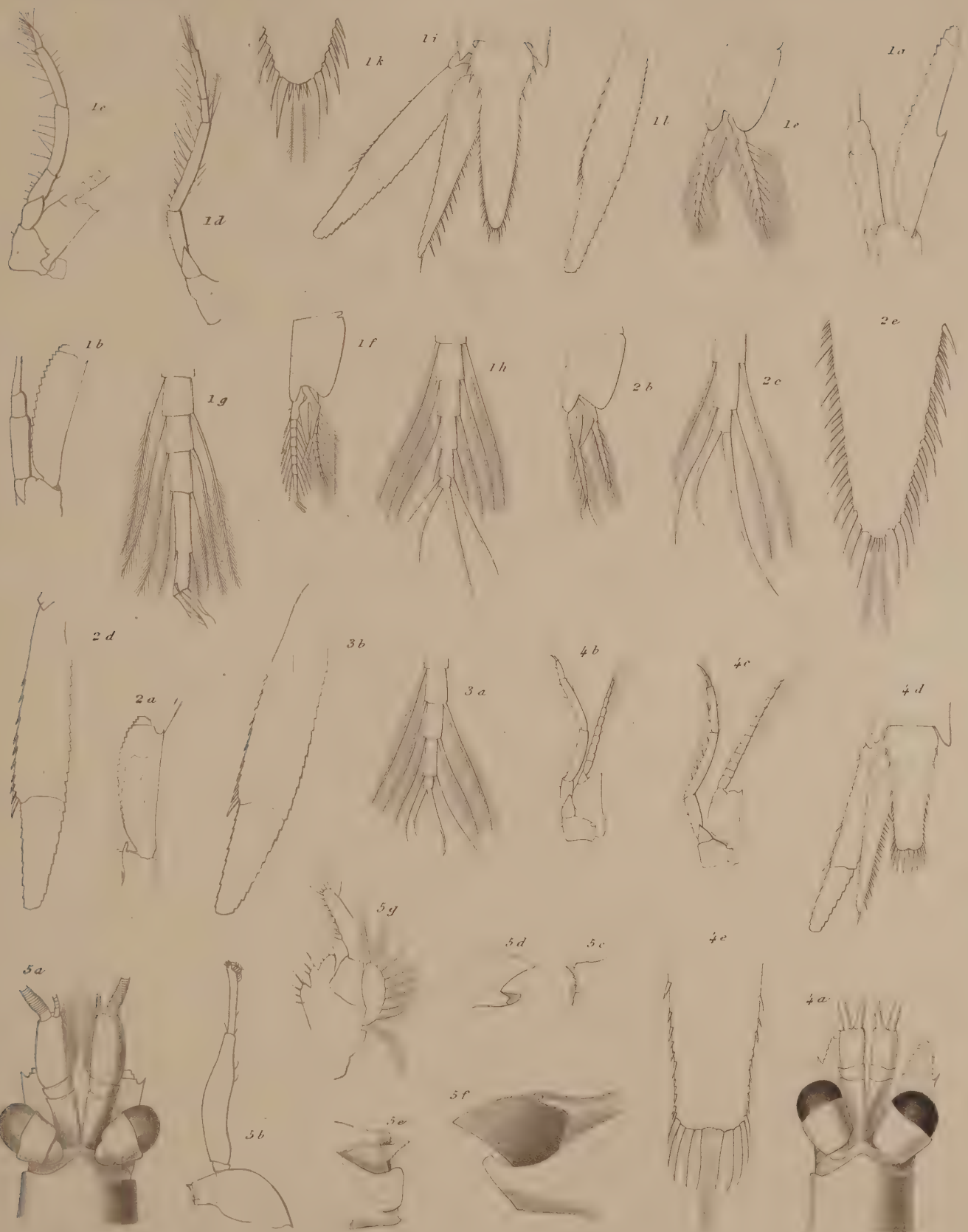
Fig. 3*a*. Distal part of the endopod of fourth right pleopod of a male from Stat. 220, from behind; × 92.
Fig. 3*b*. Exopod of left uropod of the same male, from above; × 32.

Fig. 4. *Siriella dubia* n. sp.

Fig. 4*a*. Anterior part of an adult female; × 32.
Fig. 4*b*. Left gnathopod of the same female, from below; × 31.
Fig. 4*c*. Left first thoracic leg of the same female, from below; × 31.
Fig. 4*d*. End of sixth abdominal segment with telson and left uropod of the same female, from above; × 31.
Fig. 4*e*. Distal part of the telson, from above; × 76.

Fig. 5. *Hemisiriella pulchra* n. gen., n. sp.

Fig. 5*a*. Anterior part of an adult male from Stat. 41; × 24.
Fig. 5*b*. Left mandible of an adult female, from below; × 42.
Fig. 5*c*. Distal part of the same left mandible, from below; × 75.
Fig. 5*d*. Distal part of the corresponding right mandible, from below; × 75.
Fig. 5*e*. Same distal part as shown in fig. 5*c* of the left mandible, from above; × 160.
Fig. 5*f*. Same distal part as shown in fig. 5*d* of the right mandible, from above; × 160.
Fig. 5*g*. Left maxilla of an adult female, from below; × 75.



1 Siriella anomala n. sp. 2. S. distinguenda n. sp. 3 S. conformalis n sp 4 S dubia n sp
5 Hemisiriella pulchra n. gen., n sp

H J Hansen del

T N Møller sc.

PLATE VI.

Fig. 1. *Hemisiriella pulchra* n. gen., n. sp. (continued).

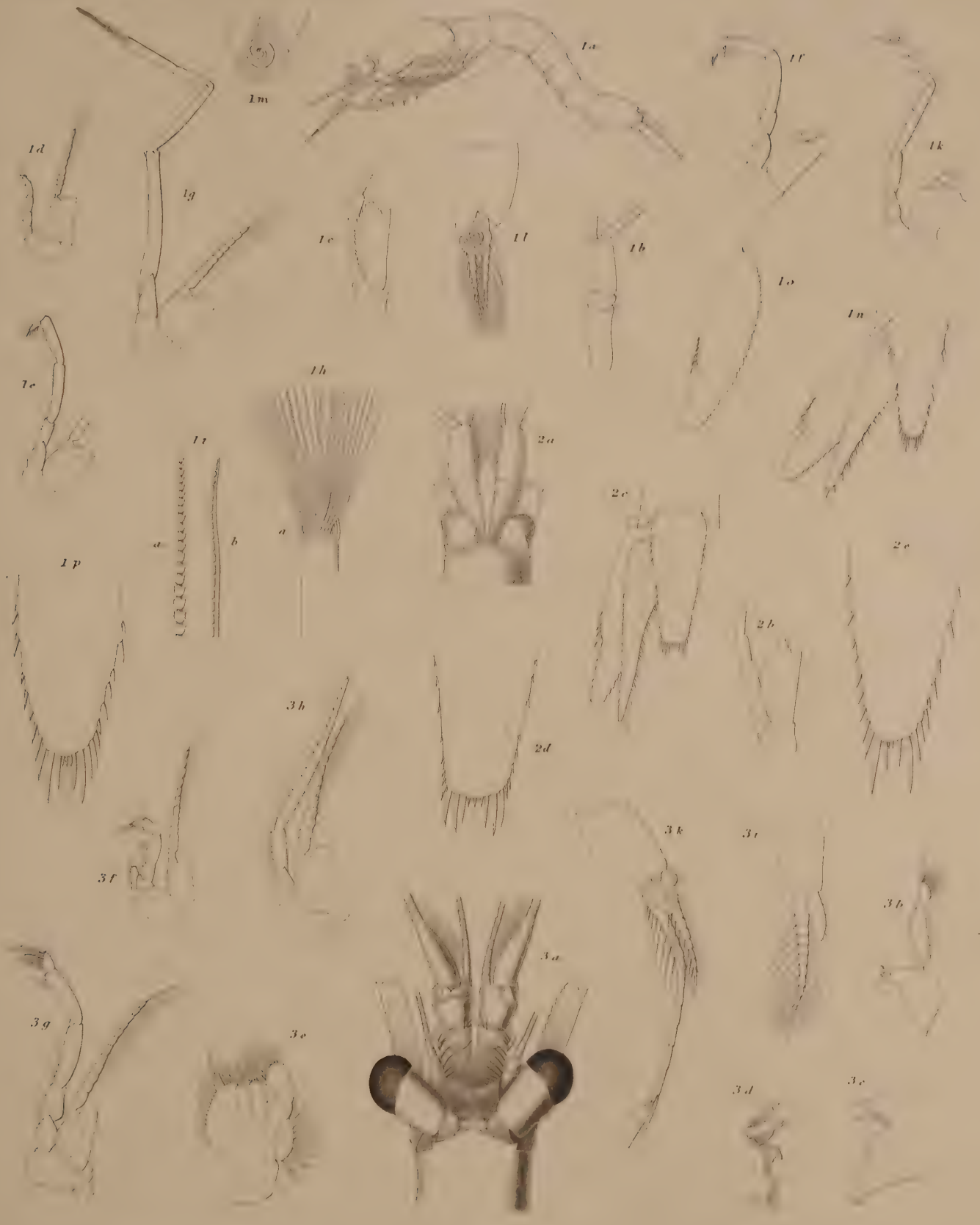
Fig. 1*a*. Adult female from Stat. 41; × $^{17}/_{2}$.
Fig. 2*b*. Right antennular peduncle of an adult female, from above; × 26.
Fig. 1*c*. Major part of right antenna of an adult female, from above; × 26.
Fig. 1*d*. Left maxilliped of an adult female from Stat. 41, from below; × 26.
Fig. 1*e*. Left gnathopod of the same female, from below; × 26.
Fig. 1*f*. Left gnathopod of another female (from Stat. 37), from below; × 26.
Fig. 1*g*. First left thoracic leg of the adult female from Stat. 41, from below; × 26.
Fig. 1*h*. Distal end of first left thoracic leg, from below; × 70. *a*. rudimentary seventh joint.
Fig. 1*i*. Distal part of two setae from the terminal brush on first thoracic leg; × 285. *a*. seta from in front; *b*. seta from the side.
Fig. 1*k*. Second left thoracic leg of a female from Stat. 37, from below; × 26.
Fig. 1*l*. Second right pleopod of a male from Stat. 41, from behind; × 26.
Fig. 1*m*. Pseudobranchia of the pleopod shown in the preceding figure; × 39.
Fig. 1*n*. End of sixth abdominal segment with telson and left uropod of a female from Stat. 41, from above; × 26.
Fig. 1*o*. Left uropod of a male from Stat. 41, from above; × 26.
Fig. 1*p*. Distal part of the female telson shown in fig. 1*n*, from above; × 78.

Fig. 2. *Hemisiriella parva* n. sp.

Fig. 2*a*. Anterior part of an adult male from Stat. 203; × 24.
Fig. 2*b*. Major part of right antenna of a female from Stat. 203; × 36.
Fig. 2*c*. End of sixth abdominal segment with telson and left uropod of the same female, from above; × 36.
Fig. 2*d*. Distal part of the female telson shown in the preceding figure, from above; × 85.
Fig. 2*e*. Distal part of the telson of a male from Stat. 203, from above; × 85.

Fig. 3. *Rhopalophthalmus egregius* n. sp.

Fig. 3*a*. Anterior part of an adult male; × 20.
Fig. 3*b*. Left mandible of an adult male, from below; × 23.
Fig. 3*c*. Distal part of the same mandible, from below; × 88.
Fig. 3*d*. Distal part of right mandible of the same male, from below; × 88.
Fig. 3*e*. Left male maxilla, from below; × 50.
Fig. 3*f*. Left maxilliped of an adult male, from below; × 23.
Fig. 3*g*. Left gnathopod of the same male, from below; × 23.
Fig. 3*h*. Left first thoracic leg of the same male, from below; × 23.
Fig. 3*i*. First left male pleopod, from behind; × 23.
Fig. 3*k*. Second left male pleopod, from behind; × 23.



1. Hemistylella pulchra n. gen., n. sp. 2. H. parva n. sp. 3. Rhopalophthalmus egregius n. sp.

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PLATE VII.

Fig. 1. *Rhopalophthalmus egregius* n. sp. (continued).

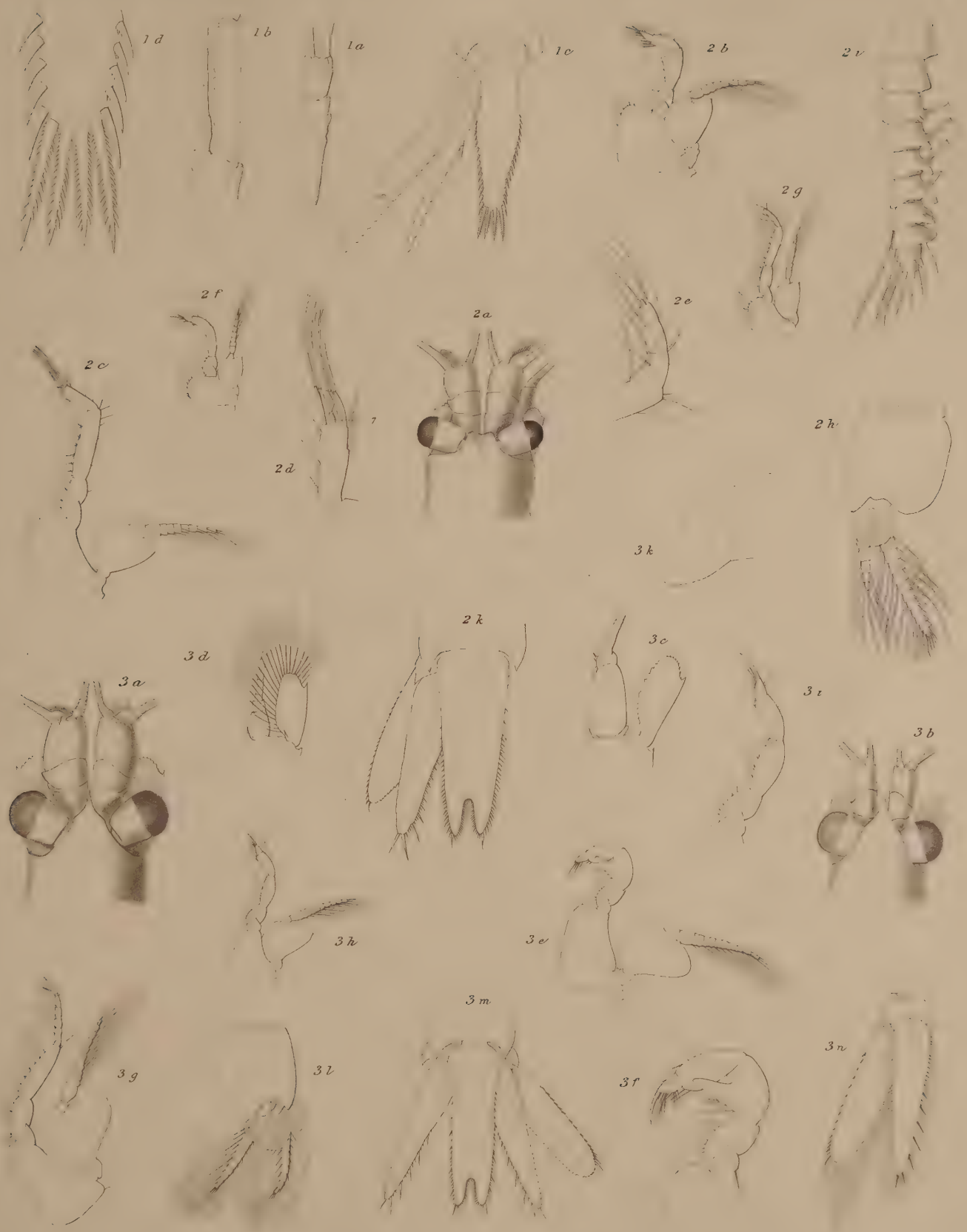
Fig. 1*a*. Right antennular peduncle of an adult female, from above; × 23. The setæ omitted.
Fig. 2*b*. Major part of right antenna of the female, from above; × 23.
Fig. 3*c*. End of sixth abdominal segment with telson and left uropod of the female, from above; × 23.
Fig. 1*d*. Distal part of the telson shown in the preceding figure, from above; × 78.

Fig. 2. *Anchialina typica* Kröyer.

Fig. 2*a*. Anterior part of an adult male, from above; × 24.
Fig. 2*b*. Left gnathopod of an adult male, from below; × 32.
Fig. 2*c*. First left thoracic leg of an adult male, from below; × 32.
Fig. 2*d*. Distal part of first left thoracic leg of an adult male, from above; × 68. 7. seventh minute joint.
Fig. 2*e*. Distal part of second left thoracic leg of an adult male, from above; × 38.
Fig. 2*f*. Left gnathopod of an adult female, from below; × 32.
Fig. 2*g*. First left thoracic leg of an adult female, from below; × 32.
Fig. 2*h*. Third right pleopod of an adult male, from behind; × 49.
Fig. 2*i*. Distal half of the exopod of the uropod shown in the preceding figure, from behind; × 145.
Fig. 2*k*. End of sixth abdominal segment with telson and left uropod of a male, from above; × 33.

Fig. 3. *Anchialina grossa* n. sp.

Fig. 3*a*. Anterior part of an adult male; × 20.
Fig. 3*b*. Anterior part of an ovigerous female; × 20.
Fig. 3*c*. Major part of right male antenna, from above; × 25.
Fig. 3*d*. Major part of right female antenna, from above; × 25.
Fig. 3*e*. Left gnathopod of an adult male, from below; × 24.
Fig. 3*f*. Major part of the endopod of the male gnathopod shown in preceding figure, from below; × 44.
Fig. 3*g*. First left thoracic leg of an adult male, from below; × 24.
Fig. 3*h*. Left gnathopod of an adult female, from below; × 24.
Fig. 3*i*. Major part of the endopod of the female gnathopod shown in the preceding figure, from below; × 44.
Fig. 3*k*. Left wing of first abdominal segment of an ovigerous female; × 27.
Fig. 3*l*. Fourth left pleopod of an adult male, from behind; × 26.
Fig. 3*m*. End of sixth abdominal segment with telson and uropods excepting left exopod of an adult male from above; × 22. Setæ omitted.
Fig. 3*n*. Left uropod of an adult male, from above; × 22.



1. Rhopalophthalmus egregius n.sp. *2. Anchialina typica Krøyer*
3. A. grossa n.sp.

H.J. Hansen del *T.N. Möller sc.*

PLATE VIII.

Fig. 1. *Anchialina grossa* n. sp. (continued).

Fig. 1*a*. Third right pleopod of an adult male, from behind; × 31.
Fig. 1*b*. Distal part of the exopod of the third male pleopod shown in the preceding figure, from behind; × 82.
Fig. 1*c*. Distal part of the exopod of the third male pleopod, from in front; × 123.
Fig. 1*d*. Distal part of the exopod of third pleopod of an immature male, from behind; × 82.

Fig. 2. *Gastrosaccus indicus* n. sp.

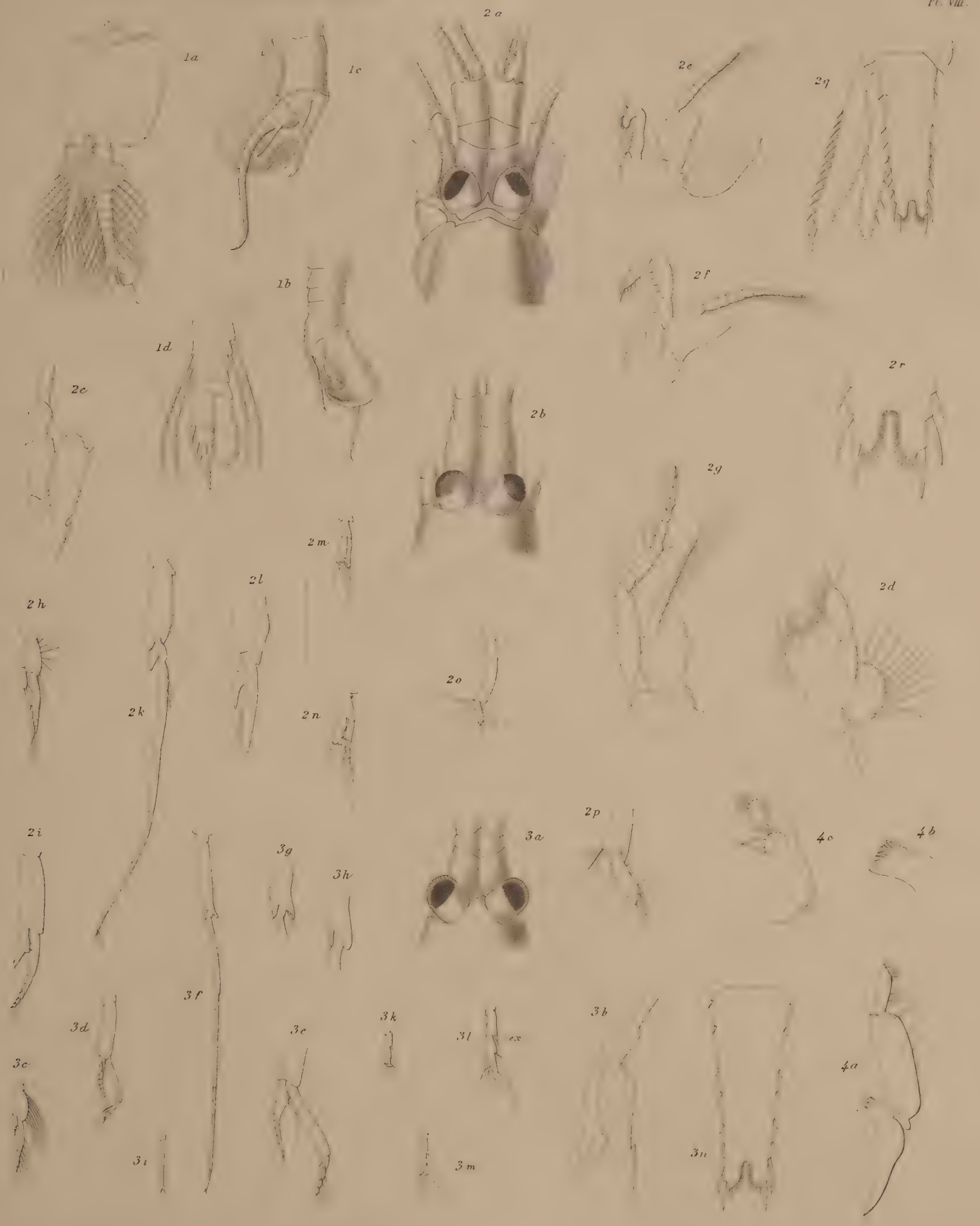
Fig. 2*a*. Anterior part of an adult male; × 32.
Fig. 2*b*. Anterior part of an ovigerous female; × 32.
Fig. 2*c*. Major part of right female antenna, from above; × 36. Setæ omitted.
Fig. 2*d*. Left maxilla of an adult female, from below; × 74.
Fig. 2*e*. Left maxilliped of the same female, from below; × 30.
Fig. 2*f*. Left gnathopod of the same female, from below; × 30.
Fig. 2*g*. First left thoracic leg of the same female, from below; × 30.
Fig. 2*h*. First right pleopod of an adult male, from behind; × 32.
Fig. 2*i*. Second right pleopod of the same male, from behind; × 32.
Fig. 2*k*. Third right pleopod of the same male, from behind; × 32.
Fig. 2*l*. Subproximal part of third right pleopod of another male, seen somewhat obliquely from behind; × 46.
Fig. 2*m*. Fourth right pleopod of an adult male, from behind; × 32.
Fig. 2*n*. Fifth right pleopod of an adult male, from behind; × 32.
Fig. 2*o*. First right pleopod of an ovigerous female, from behind; × 32.
Fig. 2*p*. Distal part of the first right female pleopod shown in the preceding figure, from behind; × 76.
Fig. 2*q*. End of sixth abdominal segment with telson and left uropod of an ovigerous female, from above; × 36.
Fig. 2*r*. Distal part of the telson shown in the preceding figure, from above; × 90.

Fig. 3. *Gastrosaccus parvus* n. sp.

Fig. 3*a*. Anterior part of an adult male; × 33.
Fig. 3*b*. Major part of right male antenna, from above; × 48.
Fig. 3*c*. First right pleopod of an adult male, from behind; × 28.
Fig. 3*d*. Second right pleopod of the same male, from behind; × 28.
Fig. 3*e*. Major distal part of the second right male pleopod shown in the preceding figure, from behind; × 52.
Fig. 3*f*. Third right pleopod of the same male, from behind; × 28.
Fig. 3*g*. Subproximal part of the same pleopod, from behind; × 48.
Fig. 3*h*. Same subproximal part of third right pleopod, obliquely from the outer side; × 52.
Fig. 3*i*. Distal part of the exopod of the same third male pleopod; × 70.
Fig. 3*k*. Fourth right pleopod of the same male, from behind; × 28.
Fig. 3*l*. Same fourth right pleopod, from behind; × 52. *ex*. exopod.
Fig. 3*m*. Fifth right pleopod of the same male, from behind; × 28.
Fig. 3*n*. Telson of the same male, from above; × 48.

Fig. 4. *Pseudanchialina pusilla* G. O. Sars.

Fig. 4*a*. Left mandible of an adult male, from below; × 80.
Fig. 4*b*. Distal part of the same mandible, from below; × 170.
Fig. 4*c*. Left maxillula of the same male, from below; × 170.



1. Anchialina grossa n. sp. 2. Gastrosaccus indicus n. sp. 3. G. parvus n. sp.

4. Pseudanchialina pusilla G.O. Sars.

H.J. Hansen del

T.N. Møller sc.

PLATE IX.

Fig. 1. *Pseudanchialina pusilla* G. O. Sars (continued).

Fig. 1*a*. Adult male from Stat. 144; × 19.
Fig. 1*b*. Anterior part of an adult male from Stat. 81; × 57.
Fig. 1*c*. Anterior part of an adult female from Stat. 81; × 57.
Fig. 1*d*. Right antennal squama of an adult male, from above; × 80.
Fig. 1*e*. Left maxilla of an adult male, from below; × 80.
Fig. 1*f*. Left maxilliped of an adult male, from below; × 80.
Fig. 1*g*. Left gnathopod of the same male, from below; × 80.
Fig. 1*h*. Abdomen of an adult male from Stat. 81; × 32.
Fig. 1*i*. End of sixth abdominal segment with telson and left uropod, from above; × 49.
Fig. 1*k*. Major distal part of telson of another male, from above; × 120.

Fig. 2. *Pseudanchialina inermis* Illig.

Fig. 2*a*. Anterior part of an adult male from Stat. 282; × 54.
Fig. 2*b*. Major part of right antenna of an adult male, from above; × 78.
Fig. 2*c*. End of sixth abdominal segment with telson and right uropod of an adult male, from above; × 78.
Fig. 2*d*. Distal part of the telson shown in the preceding figure, from above; × 190.

Fig. 3. *Erythrops spinifera* n. sp.

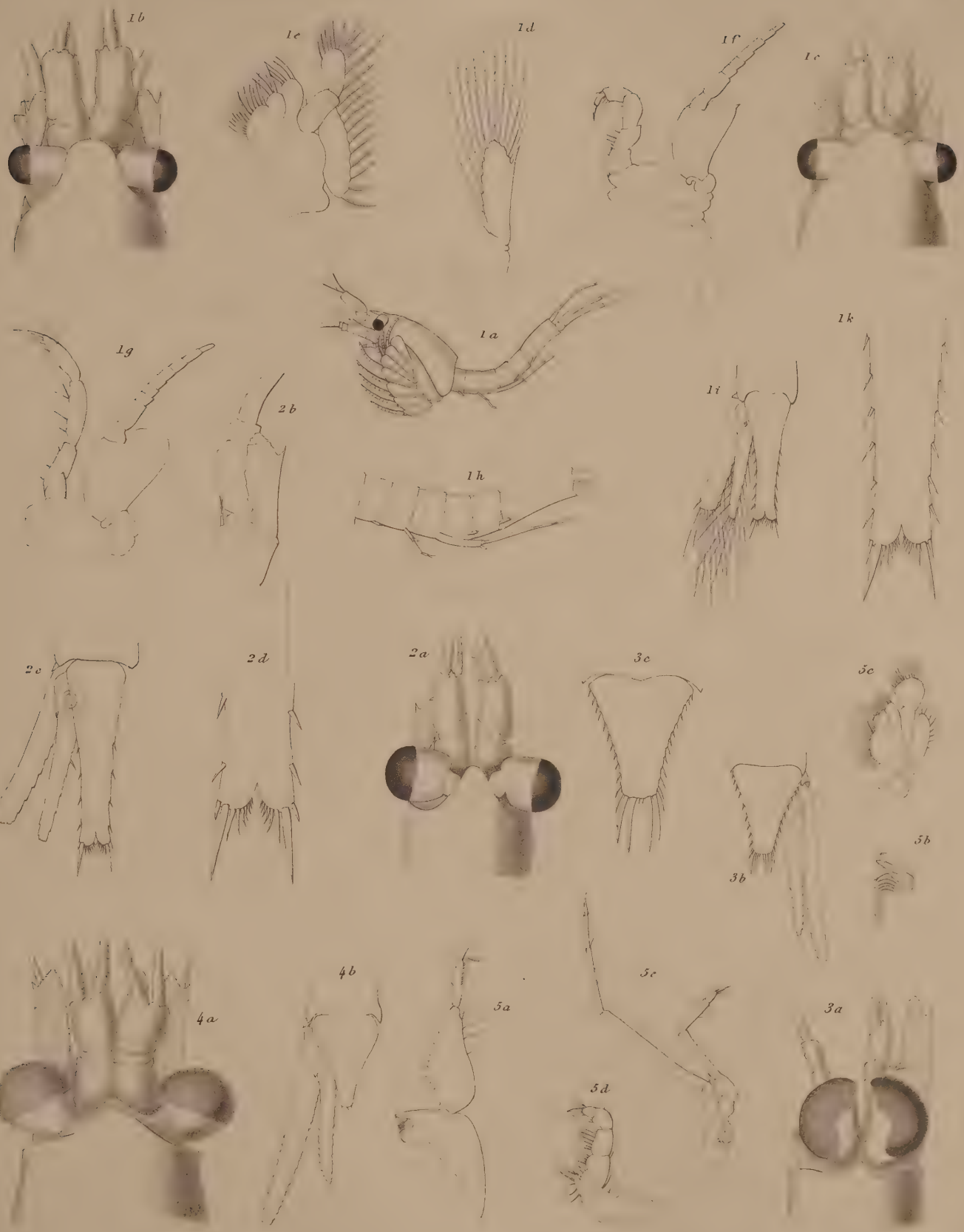
Fig. 3*a*. Anterior part of an adult female; × 28.
Fig. 3*b*. End of sixth abdominal segment with telson and right uropod of the same female, from above; × 28.
Fig. 3*c*. Telson of an immature specimen, from above; × 42.

Fig. 4. *Meterythrops indica* n. sp.

Fig. 4*a*. Anterior part of a probably adult male; × 21.
Fig. 4*b*. End of sixth abdominal segment with telson and left uropod of the same male, from above; × 21.

Fig. 5. *Synerythrops intermedia* n. gen., n. sp.

Fig. 5*a*. Left mandible of an immature female, from below; × 30.
Fig. 5*b*. Distal part of the same mandible, from below; × 72.
Fig. 5*c*. Left maxilla of the same specimen, from below; × 30.
Fig. 5*d*. Left maxilliped of the same specimen, from below; × 30. Exopod and epipod omitted.
Fig. 5*e*. Right gnathopod and first thoracic leg of the same specimen, from below; × 23.



1. Pseudanchialina pusilla G.O. Sars. 2. P. inermis Illig. 3. Erythrops spinifera n. sp.
4. Meterythrops indica n. sp. 5. Synerythrops intermedia n. gen., n. sp.

H.J. Hansen del. *T. N. Möller sc.*

PLATE X.

Fig. 1. *Synerythrops intermedia* n. gen., n. sp. (continued).

Fig. 1*a*. Anterior part of an immature female; × 33.
Fig. 1*b*. End of sixth abdominal segment with telson and left uropod, from above; × 33.
Fig. 1*c*. Distal end of the telson shown in the preceding figure; × 55.

Fig. 2. *Dactylamblyops fervida* n. sp.

Fig. 2*a*. Anterior part of a not full-grown female; × 28.
Fig. 2*b*. Left mandible of the same specimen, from below; × 32.
Fig. 2*c*. Distal part of the same left mandible, obliquely from below; × 80.
Fig. 2*d*. Left maxilliped of the same specimen, from below; × 32. Exopod omitted.
Fig. 2*e*. Left gnathopod of the same specimen, from below; × 23.
Fig. 2*f*. Endopod of first left thoracic leg of the same specimen, from below; × 23.
Fig. 2*g*. End of sixth abdominal segment with telson and left uropod, from above; × 28.
Fig. 2*h*. Major distal part of the telson shown in the preceding figure, from above; × 63.

Fig. 3. *Euchætomera tenuis* G. O. Sars.

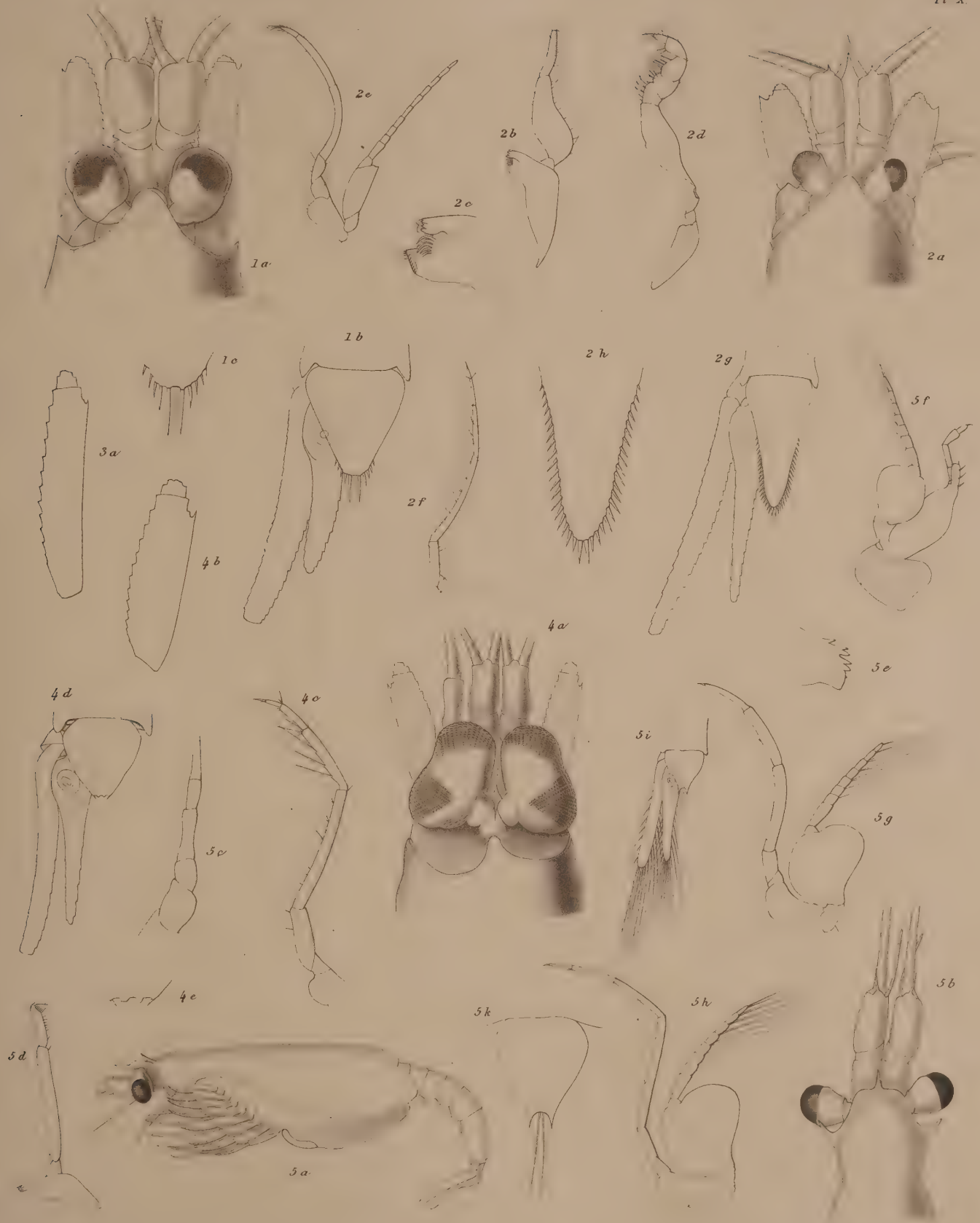
Fig. 3*a*. Right antennal squama of an adult female, from above; × 40.

Fig. 4. *Euchætomera oculata* n. sp.

Fig. 4*a*. Anterior part of an immature female; × 32.
Fig. 4*b*. Right antennal squama of the same specimen, from above; × 55.
Fig. 4*c*. Endopod of second left thoracic leg of the same specimen, from below; × 34.
Fig. 4*d*. End of sixth abdominal segment with telson and left uropod of the same immature female, from above; × 32.
Fig. 4*e*. End of the telson shown in the preceding figure; × 84.

Fig. 5. *Gymnerythrops anomala* n. gen., n. sp.

Fig. 5*a*. A not full-grown female from Stat. 144; × 20.
Fig. 5*b*. Anterior part of another not full-grown female; × 34.
Fig. 5*c*. Proximal part of right antenna in natural position, from below; × 82.
Fig. 5*d*. Left mandible of a not full-grown female, from below; × 50.
Fig. 5*e*. Distal part of left mandible, from in front; × 328. The movable lacinia, indicated by a dotted line, is shining through the incisive lobe.
Fig. 5*f*. Left maxilliped of a not full-grown female, from above; × 50.
Fig. 5*g*. Left gnathopod of the same specimen, from below; × 50.
Fig. 5*h*. Second left thoracic leg of the same specimen, from below; × 50.
Fig. 5*i*. End of sixth abdominal segment with telson and left uropod of a not full-grown female, from above; × 34.
Fig. 5*k*. Same telson as in the preceding figure, from above; × 83.



1. Synerythrops intermedia n. gen., n. sp. 2. Daotylamblyops fervida n. sp. 3. Euchætomera tenuis G.O.S.
4. E. oculata n. sp. 5. Gymnerythrops anomala n. gen., n. sp.

H. J Hansen del. *T. N. Möller sc.*

PLATE XI.

Fig. 1. *Arachnomysis affinis* n. sp.

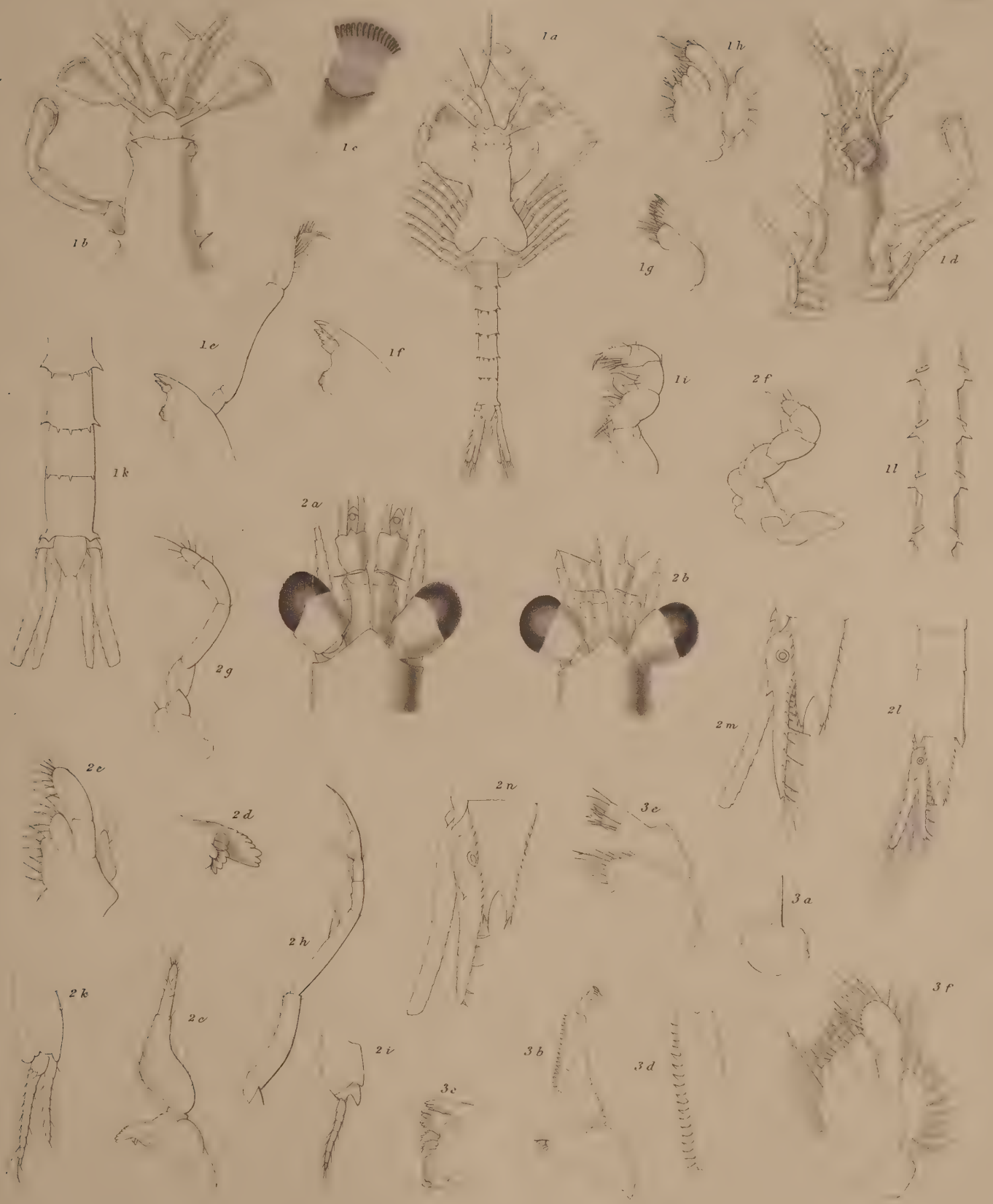
Fig. 1*a*. Not full-grown female; × 13.
Fig. 1*b*. Anterior part of the same, from above; × 23.
Fig. 1*c*. Optic longitudinal section of the right eye, from above; × 47.
Fig. 1*d*. Anterior part of the same specimen, from below; × 23.
Fig. 1*e*. Left mandible, from below; × 38.
Fig. 1*f*. Distal part of same mandible, from below; × 57.
Fig. 1*g*. Left maxillula, from below; × 38.
Fig. 1*h*. Left maxilla, from below; × 38.
Fig. 1*i*. Left maxilliped, from below; × 38.
Fig. 1*k*. Major posterior part of the abdomen of the same specimen, from above; × 31.
Fig. 1*l*. First to fourth abdominal segment, from below; × 30.

Fig. 2. *Uromysis armata* n. gen., n. sp.

Fig. 2*a*. Anterior part of an adult male; × 37.
Fig. 2*b*. Anterior part of an adult female; × 37.
Fig. 2*c*. Left mandible of an immature male, from below; × 78.
Fig. 2*d*. Distal part of the same mandible, from above; × 156.
Fig. 2*e*. Left maxilla of the immature male, from below; × 78.
Fig. 2*f*. Left maxilliped of the same specimen, from below; × 78. Exopod omitted.
Fig. 2*g*. Left gnathopod of the same specimen, from below; × 78. Exopod omitted.
Fig. 2*h*. Endopod of second left thoracic leg of the same specimen, from below; × 78.
Fig. 2*i*. First left pleopod of an adult male, from behind; × 55.
Fig. 2*k*. Fourth left pleopod of an adult male, from behind; × 55.
Fig. 2*l*. Posterior half of abdomen, right uropod omitted, of an adult female, from above; × 30.
Fig. 2*m*. Telson and left uropod of the same adult female, from above; × 55.
Fig. 2*n*. Telson and left uropod of an adult male, from above; × 55.

Fig. 3. *Lycomysis spinicauda* n. gen., n. sp.

Fig. 3*a*. Labrum of an immature male, from below; × 68.
Fig. 3*b*. Left mandible of the same specimen, from below; × 68.
Fig. 3*c*. Distal part of the mandible shown in the preceding figure, from below; × 174.
Fig. 3*d*. Major inner part of second joint of the palp of the mandible shown in fig. 3*c*, from below; × 130.
Fig. 3*e*. Left maxillula of the same specimen, from below; × 133.
Fig. 3*f*. Left maxilla of the same specimen, from below; × 133.



1. Arachnomysis affinis n. sp. 2. Uromysis armata n. gen., n. sp.
3. Lycomysis spinicauda n. gen., n. sp.

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PLATE XII.

Fig. 1. *Anisomysis laticauda* n. gen., n. sp.

Fig. 1*a*. Anterior part of the adult male; × 43.
Fig. 1*b*. Distal part of left antennular peduncle of the same male, from below; × 80.
Fig. 1*c*. Major part of left antenna of the male, from below; × 73.
Fig. 1*d*. Left mandible of the male, from below; × 56.
Fig. 1*e*. Distal part of the same mandible, from below; × 156.
Fig. 1*f*. Right maxilliped of the same male, from below; × 56. Proximal part with exopod and epipod omitted.
Fig. 1*g*. Right gnathopod of the same male, from below; × 56.
Fig. 1*h*. First left thoracic leg of the same specimen, from below; × 56.
Fig. 1*i*. Major part of abdomen of the adult male; × 29.
Fig. 1*k*. First left pleopod of the adult male, from in front; × 53.
Fig. 1*l*. Second left pleopod of the same male, from in front; × 53.
Fig. 1*m*. Third left pleopod of the same male, from in front; × 53.
Fig. 1*n*. Fourth left pleopod of the same male, from in front; × 53.
Fig. 1*o*. Distal part of the exopod of the pleopod shown in the preceding figure, from in front; × 150.
Fig. 1*p*. Fifth left pleopod of the same male, from in front; × 53.
Fig. 1*q*. The pleopod shown in the preceding figure; × 123.
Fig. 1*r*. End of sixth abdominal segment with telson and left uropod of the adult male, from above; × 56.
Fig. 1*s*. Distal part of the telson shown in the preceding figure, from above; × 88.

Fig. 2. *Lycomysis spinicauda* n. gen., n. sp. (Continued from Pl. XI).

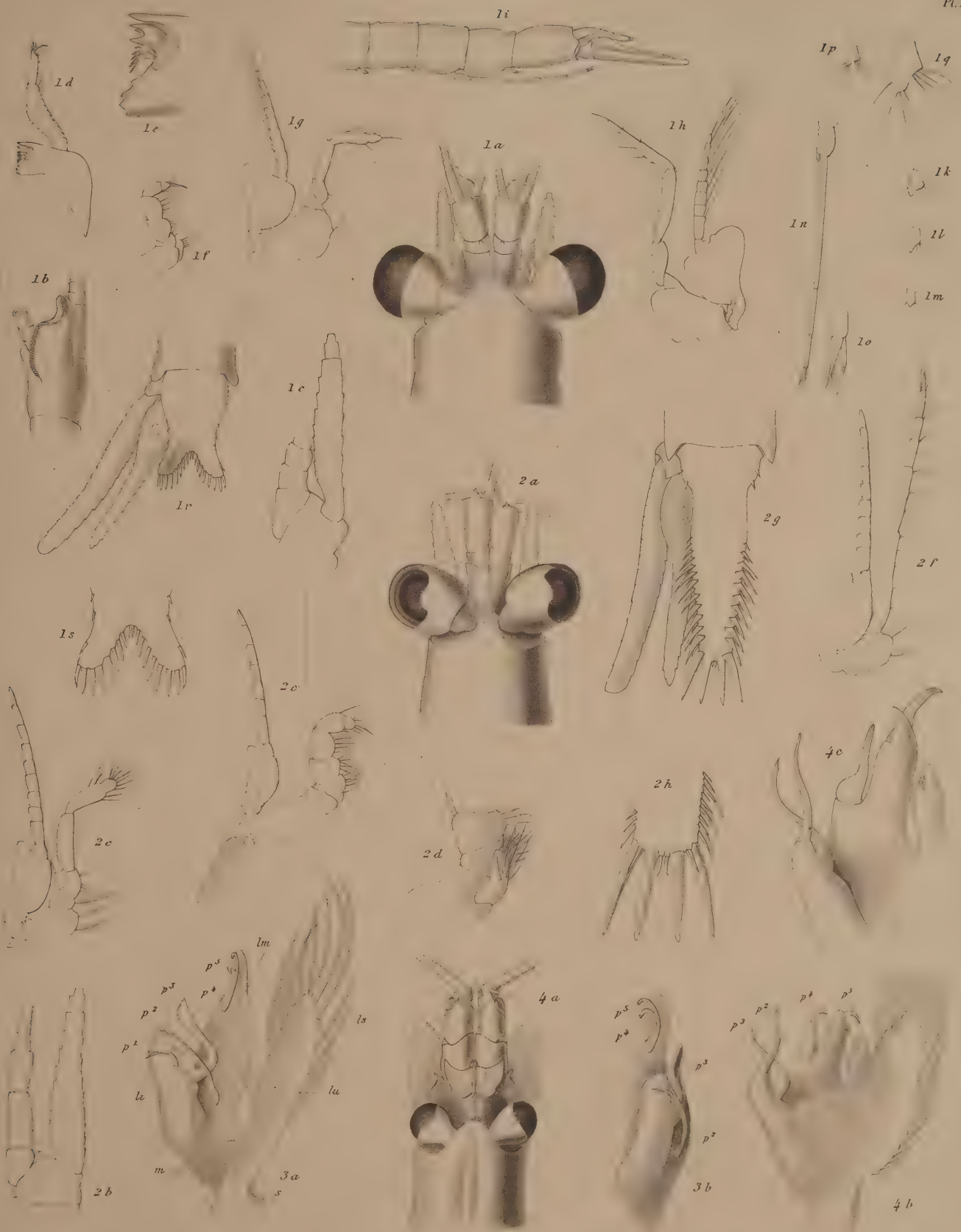
Fig. 2*a*. Anterior part of an immature male; × 46.
Fig. 2*b*. Major part of left antenna of an immature male, from below; × 57.
Fig. 2*c*. Right maxilliped of an immature male, from below; × 68.
Fig. 2*d*. Distal part of second joint with its lobe, third joint and fourth joint of the left maxilliped of another immature specimen, from above; × 130.
Fig. 2*e*. Right gnathopod of an immature male, from below; × 68.
Fig. 2*f*. First right thoracic leg of the same specimen, from below; × 68.
Fig. 2*g*. End of sixth abdominal segment with telson and left uropod of an immature male, from above; × 68.
Fig. 2*h*. Distal part of the telson shown in the preceding figure, from below; × 130.

Fig. 3. *Thysanopoda tricuspidata* H. M.-Edw.

Fig. 3*a*. Endopod of first left pleopod of a large adult male from lat. 12° S., long. 103° 50′ E., unrolled and seen from behind; × 41. *s*. stalk; *m*. main plate; *li*. inner lobe; *lm*. median lobe; *ls*. setiferous lobe; *lu*. auxiliary lobe; p^1. spine-shaped process; p^2. terminal process; p^3. proximal process; p^4. lateral process; p^5. additional process.
Fig. 3*b*. The inner and the median lobes of the same endopod, rolled up and seen from the inner side; × 41. The lettering as in fig. 3*a*.

Fig. 4. *Thysanopoda æqualis* H. J. H.

Fig. 4*a*. Anterior part of a small adult male from Stat. 118; × 15.
Fig. 4*b*. Copulatory organ of first left pleopod of a small male from Stat. 118, unrolled and seen from behind; × 63. The lettering as in fig. 3*a*.
Fig. 4*c*. Inner, median and auxiliary lobes of left copulatory organ of a larger male, from behind; × 72. The lateral process is distally curved forwards and its curvature therefore scarcely visible.



1. *Anisomysis laticauda* n. gen., n. sp. 2. *Lycomysis spinicauda* n. gen., n. sp. 3. *Thysanopoda tricuspidata* M.-Edw.
4. *T. æqualis* H.J.H.

H. J. Hansen del. T. N. Möller sc.

PLATE XIII.

Fig. 1. *Thysanopoda æqualis* H. J. H. (continued).

Fig. 1*a*. Anterior part of an adult male from Stat. 148; × 13.

Fig. 2. *Thysanopoda orientalis* n. sp.

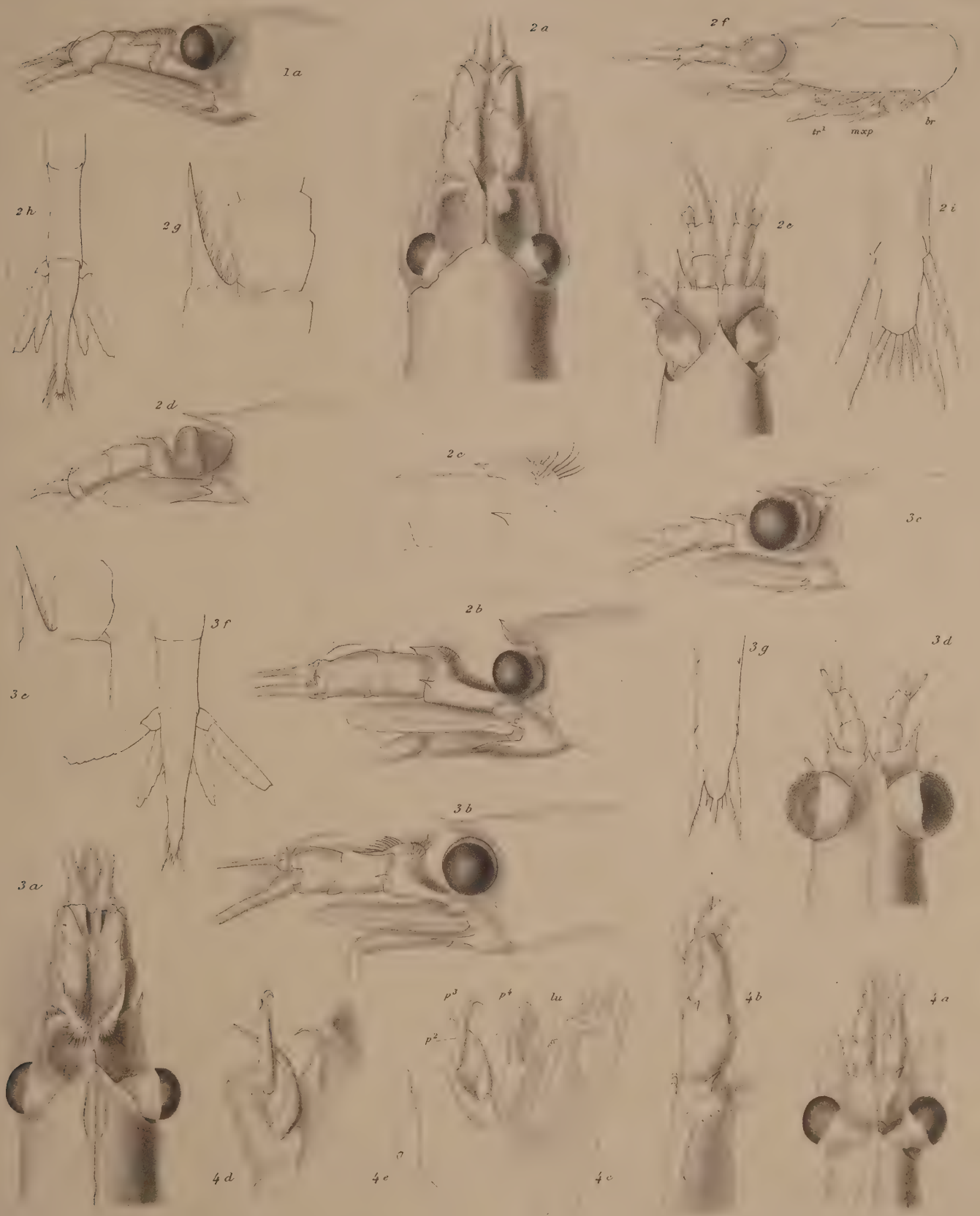
Fig. 2*a*. Anterior part of a very large female from Stat. 203; × $^{11}/_{2}$.
Fig. 2*b*. Anterior part of the same female, from the side; × 9.
Fig. 2*c*. Major part of left antennular peduncle of the same female, from the side; × 15.
Fig. 2*d*. Anterior part of a very young specimen measuring 10 mm., from the side; × 18.
Fig. 2*e*. Anterior part of a larva, 5.7 mm. long, from above; × 26.
Fig. 2*f*. Anterior part of the same larva, from the side; × 20. *mxp*. maxilliped; *trl*^{1}. first thoracic leg; *br*. branchiæ.
Fig. 2*g*. Distal part of first joint with second joint of left antennular peduncle of the same larva, from above; × 80.
Fig. 2*h*. Posterior part of the abdomen of the same larva, from above; × 23.
Fig. 2*i*. Posterior part of the telson of the same larva, from above; × 81.

Fig. 3. *Thysanopoda Agassizii* Ortm.

Fig. 3*a*. Anterior part of an immature male from Stat. 203; × 12.
Fig. 3*b*. Anterior part of the same immature male, from the side; × 12.
Fig. 3*c*. Anterior part of a very young specimen, measuring 9.5 mm., from the side; × 21.
Fig. 3*d*. Anterior part of a larva measuring 4.7 mm., from above; × 30.
Fig. 3*e*. Distal part of first joint with second joint of left antennular peduncle of the larva shown in fig. 3*d*, from above; × 76.
Fig. 3*f*. Posterior part of the abdomen of the same larva, from above; × 33.
Fig. 3*g*. Posterior half of the telson of the same larva, from above; × 76.

Fig. 4. *Euphausia diomedeæ* Ortm.

Fig. 4*a*. Anterior part of a male from Stat. 185; × 14.
Fig. 4*b*. Peduncle of the right antennula of another male, from above; × 30.
Fig. 4*c*. Copulatory organ of first left pleopod of a somewhat small adult male from Stat. 185, unrolled and seen from behind; × 61. p^{2}. terminal process; p^{3}. proximal process; p^{4}. lateral process; *lu*. auxiliary lobe.
Fig. 4*d*. Inner lobe and major part of median lobe of left copulatory organ of a large male from Stat. 185; × 70.
Fig. 4*e*. Distal part of the proximal process of the organ shown in fig. 4*c*, from the side; × 300.



1. Thysanopoda æqualis H.J.H. *2. T. orientalis* H.J.H. *3. T. Agassizii* Ortm.
4. Euphausia diomedeæ Ortm.

H. J. Hansen del. T. N. Möller sc.

PLATE XIV.

Fig. 1. *Euphausia mutica* H. J. H.

Fig. 1*a*. Peduncle of the right antennula of a male from Stat. 177ª, from above; × 43.
Fig. 1*b*. Copulatory organ of first left pleopod of an adult male from Stat. 177ª, unrolled and seen from behind; × 58. The distal part of the median lobe turns the beak-shaped end forwards, and therefore its shape cannot be discerned. *f*. foot, and *h*. heel of the terminal process.
Fig. 1*c*. Same copulatory organ, rolled up and seen from the inner side, showing the shape of the distal part of the median lobe, *lm*.; × 58.
Fig. 1*d*. Distal part of the proximal process, from behind; × 142.

Fig. 2. *Euphausia similis* G. O. Sars, var. *crassirostris* n. var.

Fig. 2*a*. Front part of carapace with eyes of an immature male, from above; × 11.
Fig. 2*b*. Anterior part of the same immature male, from the left side; × 13.
Fig. 2*c*. Terminal part of first joint with the proximal part of second joint of left antennula of the same specimen, from the outer side; × 29.

Fig. 3. *Euphausia tenera* H. J. H.

Fig. 3*a*. Front end of carapace with the right eye, antennula and squama of a male from Stat. 203; × 33.
Fig. 3*b*. Same parts of a female from the same station; × 33.
Fig. 3*c*. Copulatory organ of first left pleopod of a male from Stat. 203, unrolled and seen from behind; × 83.
Fig. 3*d*. Proximal process of the same organ, from behind; × 180.
Fig. 3*e*. Distal part of the median lobe with the lateral process of the same organ, from behind; × 180.

Fig. 4. *Euphausia pseudogibba* Ortm.

Fig. 4*a*. Major part of left antennular peduncle of a male, from the side; × 30. *c*. dorsal carina of third joint.
Fig. 4*b*. Major posterior part of the abdomen of a male, from the side; × 7.
Fig. 4*c*. Dorsal process of third abdominal segment of the same specimen; × 32.
Fig. 4*d*. Copulatory organ of first left male pleopod, only half unrolled and seen from behind; × 43. p^2. terminal process; p^3. proximal process; p^4. lateral process; *lm*. median lobe.
Fig. 4*e*. Inner half of a similar organ, almost totally unrolled and seen from behind; × 43. *f*. foot, and *h*. heel of the terminal process.

Fig. 5. *Euphausia hemigibba* n. sp.

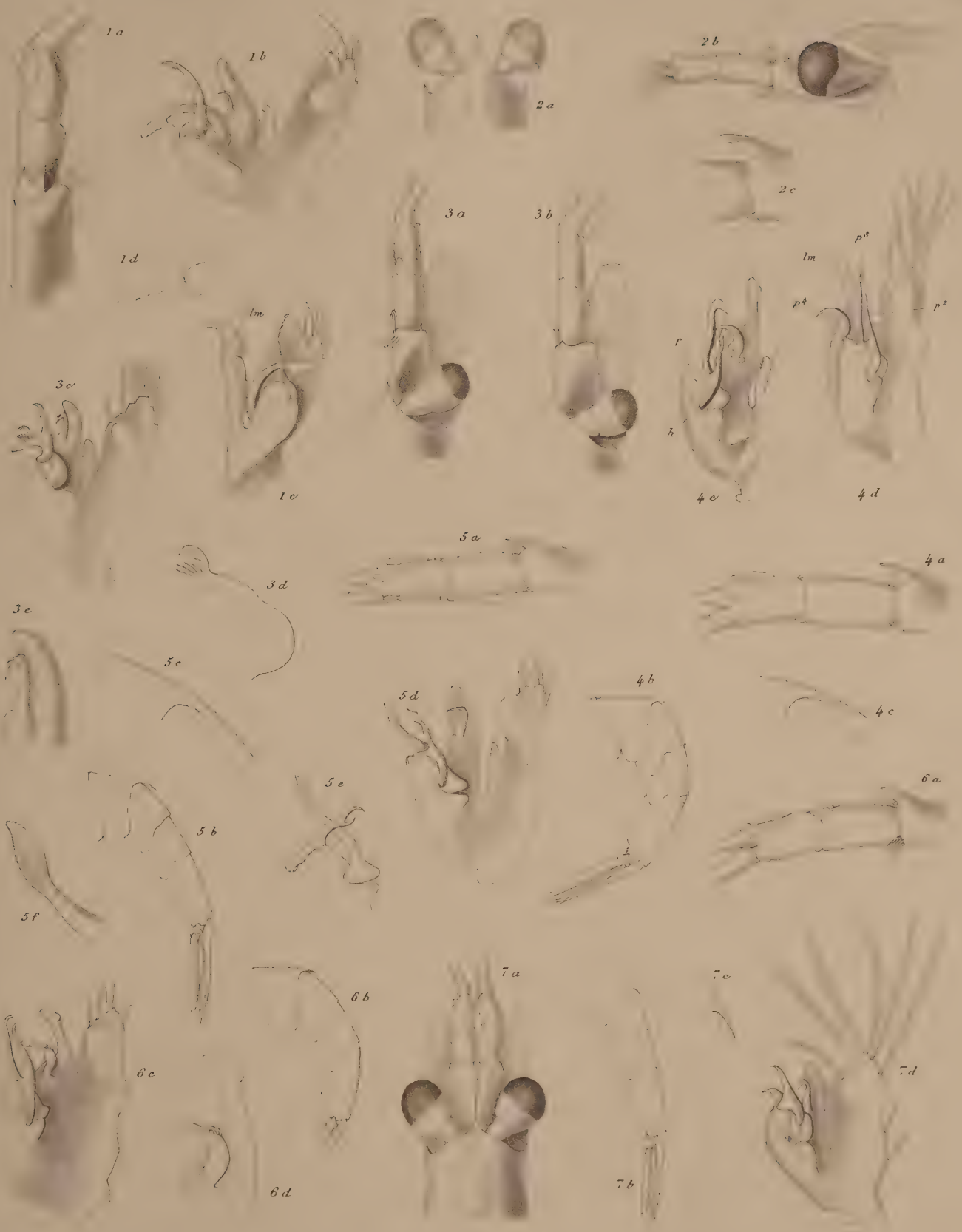
Fig. 5*a*. Major part of left antennular peduncle of a male, from the side; × 30.
Fig. 5*b*. Major posterior part of the abdomen of a male, from the side; × 7.
Fig. 5*c*. Dorsal process of third abdominal segment of the same specimen; × 28.
Fig. 5*d*. Copulatory organ of first left male pleopod, nearly unrolled and seen from behind; × 47.
Fig. 5*e*. Inner lobe of a similar organ, with the terminal process turned half round, from behind; × 50.
Fig. 5*f*. Distal part of the proximal process of the same organ, from behind; × 100.

Fig. 6. *Euphausia paragibba* n. sp.

Fig. 6*a*. Major part of left antennular peduncle of a male, from the side; × 28.
Fig. 6*b*. Major posterior part of the abdomen of a male, from the side; × $^{35}/_{4}$.
Fig. 6*c*. Copulatory organ of first left male pleopod, nearly unrolled and seen from behind; × 40.
Fig. 6*d*. Median lobe of the same organ, from behind; × 78.

Fig. 7. *Euphausia Sibogæ* H. J. H.

Fig. 7*a*. Anterior part of a male from Stat. 203; × 23.
Fig. 7*b*. Major posterior part of the abdomen of a male; × 10.
Fig. 7*c*. Dorsal process of third abdominal segment of the same specimen; × 30.
Fig. 7*d*. Copulatory organ of first left male pleopod, unrolled and seen from behind; × 80.



1. Euphausia mutica H.J.H. *2. E. similis* G.O.S. *3. E. tenera* H.J.H. *4. E. pseudogibba* Ortm.
5. E. hemigibba n. sp. *6. E. paragibba* n. sp. *7. E. Sibogæ* H.J.H.

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PLATE XV.

Fig. 1. *Pseudeuphausia latifrons* G. O. Sars.

Fig. 1*a*. Anterior part of a male from Stat. 138; × 33.
Fig. 1*b*. Peduncle of right antennula of the same male; × 55.
Fig. 1*c*. Copulatory organ of first left male pleopod, unrolled and seen from behind; × 130. The lettering as in fig. 3*a* on Pl. XII.
Fig. 1*d*. Copulatory organ of another male, from the inner side; × 75. *c*. coupling hooks.

Fig. 2. *Nematoscelis microps* G. O. Sars.

Fig. 2*a*. Anterior part of a male from Stat. 143; × 10.
Fig. 2*b*. Anterior part of another male from the same locality; × 10.
Fig. 2*c*. Anterior part of a female from Stat. 203; × 10.
Fig. 2*d*. Distal part of first thoracic leg of a female; × 28.
Fig. 2*e*. Portion of the distal half of the longest terminal spine of the part shown in the preceding figure, from the side; × 182.
Fig. 2*f*. Copulatory organ of first left male pleopod, unrolled and seen from behind; × 84. The lettering as in fig. 3*a* on Pl. XII.
Fig. 2*g*. Inner and median lobes of left copulatory organ of another male, from behind; × 84.
Fig. 2*h*. Inner and median lobes of left copulatory organ of the male shown in fig. 2*a*, from behind; × 84.
Fig. 2*i*. Anterior part of a young specimen measuring 6.7 mm. in length, from the side; × 20.
Fig. 2*k*. Anterior part of a still smaller specimen measuring 4.7 mm.; × 20.

Fig. 3. *Nematoscelis gracilis* n. sp.

Fig. 3*a*. Anterior part of a male from Stat. 203; × 15.
Fig. 3*b*. Anterior part of a female from Stat. 203; × 15.
Fig. 3*c*. Distal part of first thoracic leg of a female; × 42.
Fig. 3*d*. Copulatory organ of first left male pleopod, unrolled and seen from behind; × 84.
Fig. 3*e*. Distal part of the proximal process of the same organ, from behind; × 250.
Fig. 3*f*. Distal part of the lateral process of the same organ, from behind; × 250.
Fig. 3*g*. Distal part of the lateral process of another organ, from behind; × 250.

Fig. 4. *Nematoscelis tenella* G. O. Sars.

Fig. 4*a*. Anterior part of an adult male from Stat. 141, from the side; × 12.
Fig. 4*b*. Anterior part of an adult female from Stat. 118, from above; × 11.
Fig. 4*c*. Distal part of first thoracic leg of a male; × 38.
Fig. 4*d*. Portion of the distal half of the longest terminal spine of the part shown in the preceding figure, from the side; × 178.
Fig. 4*e*. Copulatory organ of first left male pleopod, unrolled and seen from behind; × 67.
Fig. 4*f*. Inner and median lobes with their processes of the same organ, from behind; × 129.
Fig. 4*g*. Distal part of the proximal process of another organ, from behind; × 320.
Fig. 4*h*. Distal part of the lateral process of the organ shown in fig. 4*e*, from behind; × 320.
Fig. 4*i*. Anterior part of a young specimen measuring 10.5 mm. in length, from above; × 15.
Fig. 4*k*. Anterior part of the same young specimen, from the side; × 12.
Fig. 4*l*. Anterior part of a still younger specimen, 7.2 mm. long, from above; × 22.
Fig. 4*m*. Anterior part of the same very young specimen, from the side; × 12.

1. Pseudeuphausia latifrons G.O.S. 2. Nematoscelis microps G.O.S. 3. N. gracilis n.sp.

4. N. tenella G.O.S.

H.J.Hansen del *T.N.Möller sc.*

PLATE XVI.

Fig. 1. *Stylocheiron carinatum* G. O. Sars.

Fig. 1*a*. Anterior part of an adult male from Stat. 189[a], from above; × 21.
Fig. 1*b*. Anterior part of another male, from the side; × 21.
Fig. 1*c*. Upper right antennular flagellum of the male from Stat. 189[a], from above; × 51.
Fig. 1*d*. Lower left antennular flagellum of the same male, from the outer side; × 45.
Fig. 1*e*. Anterior part of an adult female from Stat. 276, from above; × 21.
Fig. 1*f*. Copulatory organ of first left male pleopod, unrolled and seen from behind; × 88.
Fig. 1*g*. Inner and median lobes with their processes of the same organ, from behind; × 237. p^1. spine-shaped process; p^2. terminal process; p^3. proximal process; p^4. lateral process; *c*. coupling hooks.
Fig. 1*h*. Inner and median lobes with their processes of left organ of another specimen, from behind; × 237.

Fig. 2. *Stylocheiron insulare* n. sp.

Fig. 2*a*. Anterior part of an adult male from Stat. 118, from above; × 15.
Fig. 2*b*. Anterior part of an adult female from Stat. 185, from above; × 15.
Fig. 2*c*. Anterior part of an adult female from Stat. 143, from the side; × 18.
Fig. 2*d*. Right antenna — major part of flagellum omitted — of an adult female, from above; × 23.
Fig. 2*e*. Distal part of second right thoracic leg of a female, from the inner side; × 44.
Fig. 2*f*. Posterior part of abdomen of an adult female, from the side; × 20.
Fig. 2*g*. Sixth abdominal segment with the basal parts of telson and left uropod of another female, from the side; × 20.
Fig. 2*h*. Copulatory organ of first left male pleopod, unrolled and seen from behind; × 122.
Fig. 2*i*. Inner and median lobes with their processes of the same organ, from behind; × 480.

Fig. 3. *Stylocheiron microphthalma* n. sp.

Fig. 3*a*. Anterior part of a subadult male from Stat. 128, from the side; × 23.
Fig. 3*b*. Right antenna — major part of flagellum omitted — of an adult female, from above; × 27.
Fig. 3*c*. Posterior part of abdomen of an adult female, from the side; × 20.
Fig. 3*d*. Inner and median lobes with their processes of left copulatory organ of an adult male, from behind; × 360. The spine-shaped process, rendered with dotted lines, was lost.

Fig. 4. *Stylocheiron affine* n. sp.

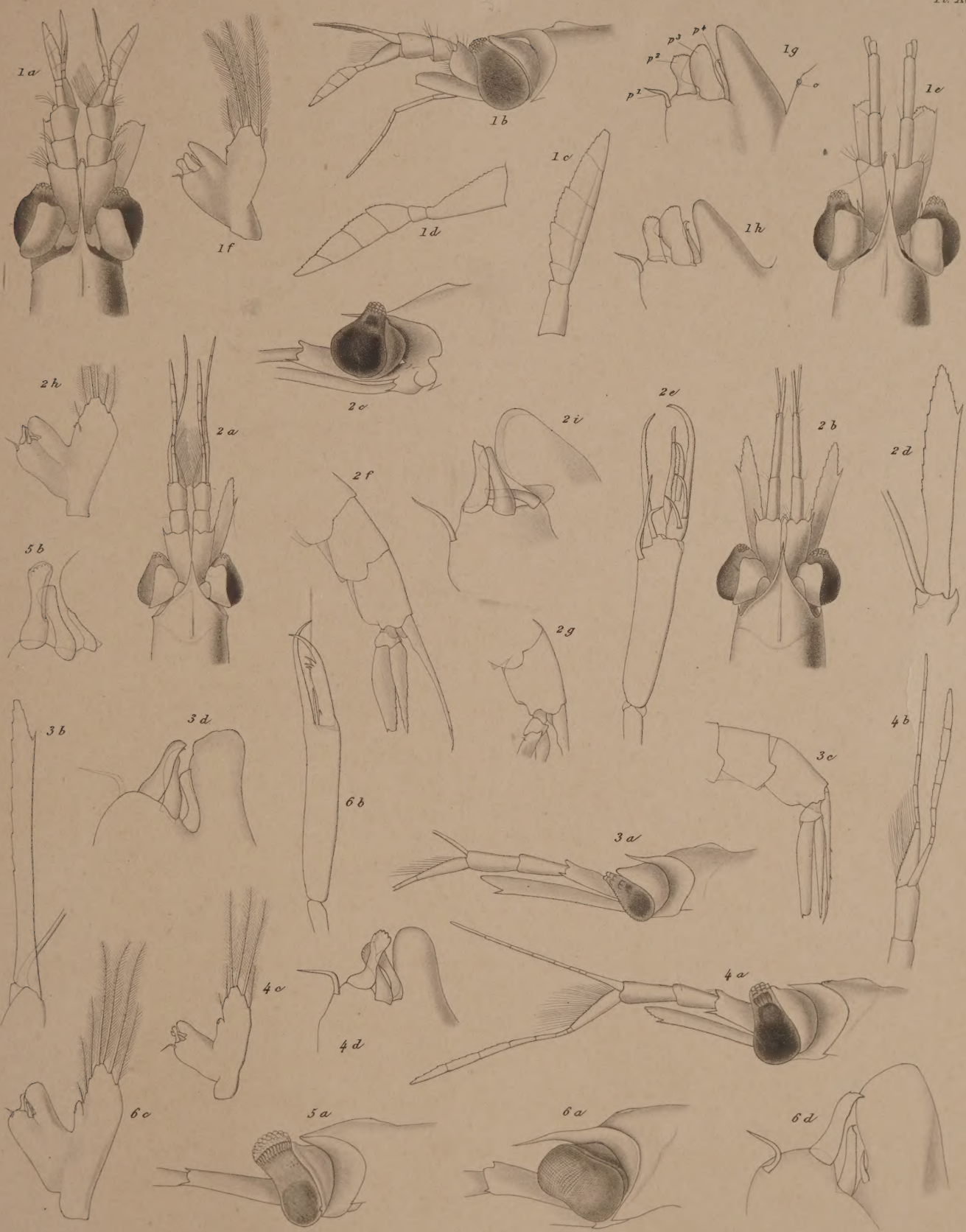
Fig. 4*a*. Anterior part of an adult male from Stat. 203, from the side; × 23.
Fig. 4*b*. Right antennula of an adult male, from above; × 25.
Fig. 4*c*. Copulatory organ of first left male pleopod, unrolled and seen from behind; × 89.
Fig. 4*d*. Inner and median lobes with their processes of the same organ, from behind; × 360.

Fig. 5. *Stylocheiron longicorne* G. O. Sars.

Fig. 5*a*. Anterior part of an adult male from Stat. 203, from the side; × 23.
Fig. 5*b*. Terminal, proximal and lateral processes with the inner margin of the median lobe of left copulatory organ, from behind; × 300.

Fig. 6. *Stylocheiron maximum* H. J. H.

Fig. 6*a*. Anterior part of an adult male from the North Atlantic (lat. 61°49′ N., long. 14°11′ W.), from the side; × 8.
Fig. 6*b*. Hand of second left thoracic leg of the adult female captured by the "Siboga", from the outer side; × 11.
Fig. 6*c*. Copulatory organ of first left pleopod of the male from the North Atlantic, unrolled and seen from behind; × 31.
Fig. 6*d*. Inner and median lobes with their four processes of the same organ, from behind; × 128.



1. Stylocheiron carinatum G.O.S. 2. S. insulare n.sp. 3 S. microphthalma n.sp.
4. S. affine n. sp. 5. S. longicorne G.O.S. 6. S. maximum H.J.H.

H.J. Hansen del. *T.N. Möller sc.*